

# FORAGER

Issue 26 / Summer 2021

## NEW TECH

What's available now, soon  
and in the future?

CARBON-FRIENDLY GRASSLAND  
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MAKING A SUCCESS OF AUTUMN GRAZING

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## FORAGER

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# Pel Power up with Pel electric fencing.



## SUPER SOLAR POWER

The PEL Integrated Solar Energizers are easily portable, simple and intuitive, plus they are more powerful than comparable energizers.

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## NEW - 46J Mains Energizer

The PEL 46000W Mains Energizer offers a powerful alternative to the PEL 836RS/R models, for farmers that want a great performing energizer with an intuitive interface. With Bluetooth and Wi-Fi compatibility, the Datamars Livestock Farm App provides the ability to monitor and control the energizer from a phone.

Powers up to 460km/640 acres/260 hectares of fence  
46 Joule Output Energy, 68 Joules stored.



**NEW**



### PEL EXTREME BRAID 3MM (400M)

PEL Extreme 3mm Braid 400m  
Conductors: 9 x 0.20 Stainless Steel  
+ 2 x 0.25 Copper

**NEW**

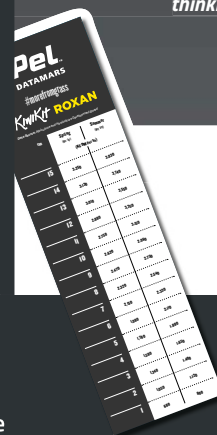


### PEL PREMIUM BRAID 3MM (400M)

PEL Premium 3mm Braid, 400m.  
Conductors: 9 x 0.20 Stainless Steel

*"The Apex Ball Valves have been the best investment I have ever made! We are definitely producing more milk – The cows are content with the water; They used to come in to milk and go straight to the trough, now they walk straight past it and into the parlour! Water is so important for cow health and milk production, to anyone thinking about investing in this system – do it! It's the best investment I have ever made!"*

Martin Mathias, Pembrokeshire



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## NEWS

## PIONEERING SOIL CARBON PROJECT LAUNCHED



Technology company, Agricarbon, has partnered with First Milk and Nestlé to carry out intensive soil carbon analysis on First Milk supplier farms. Using state-of-the-art machinery originally developed for NASA to sample soils on Mars, the project allows soil carbon sequestration to be quantified over time to support First Milk's net zero ambitions. Nestlé is supporting the project to drive meaningful progress in carbon reduction through its supply chain; First Milk supplying several Nestlé UK production plants. The soil carbon map created from the project will demonstrate how farms can capture more carbon through sequestration and inform the development of proactive soil stewardship.

First Milk's Sustainability Director, Mark Brooking, commented: "Having robust, scientifically-validated soil carbon data is critical to the successful delivery of our sustainability strategy. This project accentuates the potentially positive impact of grass-based dairy farming and advances the work already being done on our members' farms."

## FORAGE APP FOR FARMERS

A new forage app for farmers from Corteva Agriscience provides 24/7 access to expert agronomy advice and resources. Available to download for free, the app includes decision-making tools to identify appropriate seed and crop protection solutions for growing the best quality and quantity of forage. The app mirrors the move of many farmers to digital tools and offers easy navigation for quick reference and access to support tools for making the right decision at the right time.

To download the app, go to  
[corteva.co.uk/forage](http://corteva.co.uk/forage)



## WHAT'S ON

### FACE-TO-FACE FARM WALKS RETURN

Germinal is delighted to announce a series of farm walks this summer, by kind invitation of the host farmers. These events look at the proactive approach to grassland management being taken by three farmers achieving outstanding livestock performance from forage. As well as hearing from the farmers themselves, expert technical advice and practical insight is provided by Germinal's forage specialists.

Due to the uncertain nature of COVID-19 restrictions, please register in advance so you can be contacted in the event of a cancellation:

<https://germinal.co.uk/farm-walks-register/>

DATE	VENUE / FARM TYPE
Wednesday 14th July	Host farmer: Rheinalt Harries Llwynmenny Farm, Bethlehem, Llandeilo, Carm, SA19 6YE. <b>Dairy</b>
Wednesday 21st July	Host farmer: Andrew Marrow Park Farm, Park Lane, Endon, Staffs, ST9 9JA. <b>Dairy</b>
Tuesday 27th July	Host farmer: John Goffin Mauldslee Farm, Gorebridge, Midlothian, EH23 4TB. <b>Sheep and deer</b>

Summer Dates

## HOW TO ACHIEVE FORAGE FIRST

Using high-quality forage is a cost-effective method of producing milk and one many UK dairy farmers are striving to adopt. AHDB's Forage First Guide is a 'how to' manual for forage production based on extensive research and industry experience. The 120-page publication provides answers to the questions every dairy farmer faces when trying to gain more milk from forage to reduce the cost of production and increase profitability. It's not just about profit though. The guide covers aspects relating to nutrition, welfare and the specific needs of dry cow and lactation feeding. It is written for both all-year-round and block calving dairy herds, and available to all levy payers.

For those who prefer digital resources, the guide is supplemented by the Forage First webpage, [ahdb.org.uk/knowledge-library/forage-first](http://ahdb.org.uk/knowledge-library/forage-first), with online tools for calculating your own herd figures.





# NEW TECH

## ROUND-UP

*Advances in technology are bringing new opportunities for agriculture. Forager takes a look at how robotics, satellite data and infra-red sensors are providing new ways to grow, measure and analyse forage.*

### Looking Ahead

#### Automated growing

The Hands Free Hectare project is run by Harper Adams University and Precision Decisions. It started in 2016 with the aim to be the first in the world to grow, tend and harvest a crop without operators in the driving seats or agronomists on the ground. The project has now expanded to a 'Hands Free Farm' of 35 hectares, exploring the possibilities of taking operators off vehicles and reducing vehicle size to reduce soil compaction and look after the environment.

The farm is currently growing wheat, oats and beans in rotation and hoping to

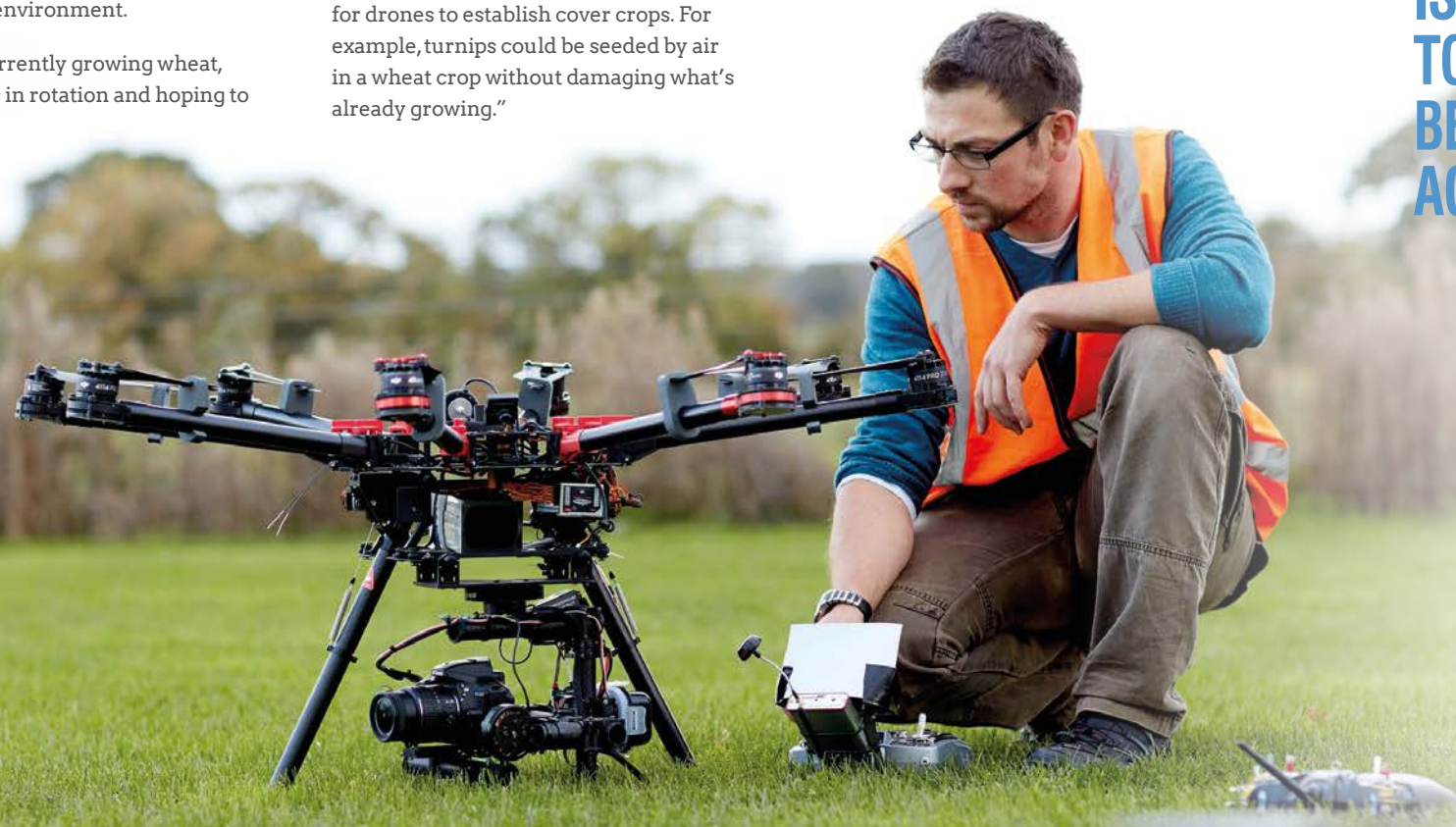
gather data that shows drone spraying and seeding is a viable alternative for UK farms. "This technology is already being used widely in China, Australia and America. But stringent controls in the UK and Europe mean we need to do more work to prove to the HSE chemicals won't drift," explains Mechatronics Researcher at Harper Adams University, Jonathan Gill.

"We are looking to carry out a project using drones on a sheep rotational system, to try ideas such as visually identifying patches where reseeding is required and then establish herbal leys in these areas. We also see potential for drones to establish cover crops. For example, turnips could be seeded by air in a wheat crop without damaging what's already growing."

Jonathan concludes that while drones and robotics have the potential to remove a lot of the dull, dirty and dangerous jobs on a farm, there is always a place for a 'real live farmer' in automation. "Like a tractor, this technology is just another tool to deliver benefits to agriculture. The number of variables and external factors means we will always need a human to evaluate the decision-making processes, but hopefully gives us the option of working smarter. It's a very exciting time."

You can find out more about the Hands Free Farm project at [www.handsfree.farm](http://www.handsfree.farm)

Jonathan Gill



### Coming Soon

#### Satellite Pasture Measurement

Recent changes in affordability and frequency of satellite imagery is allowing LIC to start trialling its Satellite Pasture and Cover Evaluation (SPACE) service in the UK. The service uses images taken by satellites to measure pasture cover and deliver results by email to dairy and beef farms, replacing the labour-intensive task of measuring grass manually on a weekly basis.

The service was initially trialled in New Zealand where it is now commercially available and being used by over 1000 farms.

"The benefit of this software is it brings consistency of measurement and is massively labour-saving," says Mark Ryder, General Manager LIC Europe. "Even with the same plate meter, people vary in their 'plonking' technique, and those with large grazing platforms can easily spend a day per week out

measuring grass. Previously, only monthly satellite images were available, which wasn't ideal for regular grass measurement, especially if that image was partially obscured by cloud. Now we have access to weekly images, the opportunities are really opening up.

The only thing we can't control is cloud cover, but our work in New Zealand has helped us to create algorithms using rainfall and growth data to make very educated guesses on pasture covers in this eventuality."

### TRIAL FARMS REQUIRED

LIC is currently seeking farms in the UK to trial the SPACE technology. To enable calibration, farms need to have robust historical data (i.e. regular plate meter records), be relatively flat and ideally a consistent pasture cover.



LIC is using satellite images to measure grass covers

For more information, please contact Sean Chubb [schubb@liceurope.com](mailto:schubb@liceurope.com)

### Available Now

#### Real-time dry matter data

An infra-red sensor for measuring crop constituent values during harvesting and mapping them using GPS position is now available. It comes from AGXTEND™, a CNH Industrial brand specialising in emerging precision farming and ISOBUS solutions. NIRXact sensors can be mounted on forage harvesters and balers to measure moisture and nutritional composition of harvested crops in real time. Their main application is to obtain a high-accuracy dry matter content analysis, but they can also read other values such as protein, starch and fibre.

Another use for the sensors is on slurry tankers, where they can record slurry application rates. Here, the NPK content of slurry spread can be logged across a field, potentially reducing mineral



NIRXact sensor fitted to forager spout

fertiliser inputs and ensuring nitrogen applications stay within legal limits.

Big data acquired by the sensors in the field can then be gathered into Field Trace Cloud software. This allows fields to be mapped and provides prescriptions for optimising yield and quality of the crop, for example to inform variable rate input application.

Find out more at [agxtend.com](http://agxtend.com) or via your local Case IH or New Holland dealership.



*Grassland is playing a major role in reducing the nation's carbon footprint. But producing carbon-friendly grassland may involve taking a new approach to its management.*  
**Ann Hardy**  
*investigates.*

# CARBON-FRIENDLY GRASSLAND

**Livestock attracts bad press when it comes to greenhouse gas emissions. But grassland itself – the very crop that's only digestible in commercial farming by ruminant livestock – has better carbon credentials than almost any other mainstream crop grown in the UK.**

While this presents the dilemma of linking the most carbon-friendly ground cover with livestock species whose function depends on greenhouse gas emissions, the challenges are not insurmountable and are being addressed by farmers using traditional, modern and emerging techniques.

Dr Elizabeth Stockdale, Head of Farming Systems Research at NIAB, says there is plenty farmers can do both to give their grassland a greater ability to absorb carbon dioxide (CO<sub>2</sub>) and help it hold on to the carbon it already has, both within and under its structure.

"Grassland sits in a good place," she says. "It provides constant ground cover meaning whenever the sun shines it is photosynthesising, capturing and supplying carbon into its root system and feeding soil organisms."

This cycle of photosynthesis coupled with microbial decomposition creates organic matter, which locks away carbon.

"Well-managed grassland does a better job of storing carbon than arable crops, partly because it does not leave bare soil exposed," she adds.

There are also other factors giving grassland superior carbon credentials, one of which is its growth rate.

"Improved, intensively-managed, productive grasslands capture a greater

amount of the sun's energy and more carbon from the atmosphere," she explains.

But even this presents a dichotomy as the growth processes on which this performance depends have traditionally relied on high inputs of artificial nitrogen.

"Nitrogen fertiliser is expensive to make in terms of fossil fuels, so it's associated with high embedded carbon emissions," she says.

## Clever legumes

Sward productivity can be maintained, however, without artificial nitrogen using legumes. With their ability to convert nitrogen from the air into a form which can be absorbed by the plant, carefully chosen legumes complement the grass.

This doesn't just mean white clover in grazing swards and red clover in those intended for silage, but includes 'clever' legumes with benefits beyond their nitrogen fixation.

**"PRODUCTIVE GRASSLANDS CAPTURE A GREATER AMOUNT OF THE SUN'S ENERGY AND MORE CARBON FROM THE ATMOSPHERE."**

DR ELIZABETH STOCKDALE



Dr Elizabeth Stockdale, Head of Farming Systems Research at NIAB

"These clever legumes include birdsfoot trefoil and sainfoin, which contain condensed tannins," she says. "They have been shown to reduce methane production, the main greenhouse gas produced during ruminant digestion, so these species could be integrated into grass swards to bring a range of benefits."

## Diverse swards

Dr Stockdale suggests adding other species to a grass sward has further benefits when it comes to carbon capture.

"The key for carbon capture is optimising resource use," she says. "This could mean better use of nutrients, for example, by having a more diverse sward with a wide-ranging set of roots to exploit different niches in the soil."

Alongside legumes, she cites deep-rooted herbal species, drought-tolerant grasses or species which 'prefer having wet feet' to collectively 'triple our benefits'.

"More variety in the sward is good for biodiversity, but can also benefit productivity and carbon capture," she says. "With the right balance of species, we gain more 'bang for our buck' as each one uses resources in a slightly different way."

## Soil disturbance

Grassland needs to be reinvigorated with new varieties and species and choosing from the Recommended Grass and Clover Lists can increase productivity and potentially disease resistance. But Dr Stockdale points out that introducing new species raises questions around reseeding methods, with ploughing

**"WHENEVER THE SUN SHINES (GRASSLAND) IS PHOTOSYNTHESISING, CAPTURING AND SUPPLYING CARBON INTO ITS ROOT SYSTEM AND FEEDING SOIL ORGANISMS."**

DR ELIZABETH STOCKDALE

known to release greenhouse gases which would otherwise remain locked in the soil.

"It's recommended to use an option involving the least amount of soil disturbance but sometimes ploughing may be needed to help address structural problems," she advises.

## Farming systems and soils

Many uplands and grassland areas of the UK use farming systems which have stored carbon efficiently over many decades.

"Many of these grassland soils have good reserves of carbon. Although their carbon-carrying capacity bucket is nearly full, it is important to maintain this position by continuing carbon-friendly practices," she says.

She predicts a strong drive to integrate grassland into arable rotations.

"A lot of interest in this area has focused on arable soils which have low organic matter and are ideal for conversion to grass. Therefore, there are likely to be opportunities for livestock to graze temporary lowland leys," she says.

Equally, on existing mixed farms she makes a case for grass and arable platforms to be integrated, rather than kept apart.

"Planning carbon-friendly approaches needs to be coupled with a good understanding of soil and environmental factors," she says. "Sandy and silty soils have lower carbon-carrying capacity than heavier soils where clay minerals help stabilise the carbon; the bucket is also bigger in deeper soils."

Emphasising the importance of farmers knowing how to measure their carbon

and target their gains, Dr Stockdale says the AHDB Soil Biology and Soil Health Partnership provides tools for the purpose.

"These help farmers measure their soil biology, understand their soil carbon status and better maintain healthy soils for both productivity and environmental benefit," she says.

Some of these measures are expected to form part of the Environmental Land Management (ELM) scheme. She is confident the scheme will reward farmers for the measures they take towards creating carbon-friendly swards.

## CARBON-FRIENDLY GRASS

- **Choose productive species** to maximise photosynthesis
- **Incorporate legumes** to fix atmospheric nitrogen
- **Look out for 'clever legumes'** which cut methane emissions
- **Introduce multi-species swards** to exploit different niches
- **Minimise soil disturbance** to keep carbon locked away
- **Check soil type** to understand its carbon capacity
- **Consider moving grassland** into arable rotations
- **Visit [ahdb.org.uk/greatsoils](http://ahdb.org.uk/greatsoils)** for measures of carbon storage



# GRASS SEED SELECTION

*The 2021 Recommended Grass and Clover List was published last month. But what does it tell you and how can it improve your grassland productivity? Forager finds out.*

**The cost of production is a major consideration for livestock farmers, whether measured per litre of milk or kg liveweight gain. Any improvement in grassland management to produce better quality forage cost effectively on farm benefits profitability as well as being fundamental to gains in productivity.**

Productive grass leys can provide 1kg DM of grazed grass for just 5p or the same amount of DM grass silage for 10-12p. But however well managed, as grass leys mature, the proportion of indigenous grass increases and perennial ryegrass falls. This reduces ley performance with lower DM tonnage and metabolisable energy (ME) yield, and a poorer response to inputs. At this point, reseeding with high-performing grasses keeps grassland as productive as possible with most reseeders seeing a return on investment within a year. Although grass seed is not the most expensive element of a reseed, not choosing the best variety for your system can be costly in the long term. The two most important elements to consider in a reseed are having the right species for your situation and the best variety of each species.

The Recommended Grass and Clover List (RGCL) for England and Wales, published annually in May, is the most recognised

'go to' reference guide for finding those varieties. A separately funded and derived list is published in Scotland. The lists are designed to help grassland farmers find the best varieties to suit a particular system and production goals when buying mixtures from a merchant or grass seed company.

**"PLANT GENETICS ARE AS ADVANCED AS ANIMAL GENETICS SO WARRANT THE SAME ATTENTION."**

Varieties being considered for the list go through a rigorous testing programme. The varieties are tested independently at 4-5 sites across the country over a four-year period. Attributes such as yield, quality, persistence and disease resistance are tested in different weather conditions, soil types, grazing and cutting regimes. As a result, inclusion on the list guarantees performance in the UK, rather than just the country of origin.

To be added to the RGCL, a variety has to be better than those already there.

Only around 1 in 20 of the varieties tested makes it onto the list, so they represent the best of the best. The list demonstrates a continual improvement in plant breeding, with a 1% DM and 0.5% D-value increase year on year.

## WHAT'S NEW IN 2021

New this year is the first Festulolium to be considered for a perennial ryegrass list. AberRoot has lined up extremely well against the intermediate tetraploid group with very high-quality grazing and cutting, superior DM yields and no weaknesses. It has the 2<sup>nd</sup> highest mid-season grazing D-value, high ME yield and excellent seasonal growth across the important times of spring, summer and autumn.



*Festulolium trial plots*

## THE RGCL IN DETAIL

**Heading date:** A spread of heading dates within a mixture gives flexibility but a tighter range is needed in silage mixtures to prevent potential loss of yield and quality seen with a wider range of dates.

**Yield:** 100 is the average yield for varieties on the RGCL so a number higher than 100 indicates an above average yield.

**D-value:** A measure of quality referring to the amount able to be digested with a higher number indicating greater digestibility. This also relates to ME value as digestibility is connected to energy availability.

Figure 1

## Recommended List of Intermediate Perennial Ryegrass Varieties 2020/2021

Variety	Heading date	Simulated grazing management		Conservation management		Ground cover	Crown rust	Decidua	Suitable for my farm
		Total annual yield Average = 100 at 9.87t DM/ha	D-value Midsummer	Total annual yield Average = 100 at 15.35t DM/ha	D-value 2nd conservation cut				
1 = poor 9 = good									
Diploids									
Boyne	21 May	99	75.5	104	69.9	6.4	8.0	5.5	
Galgorm	22 May	105	78.1	105	75.4	6.2	7.5	[5.3]	
Aston/Conqueror	24 May	99	77.6	100	74.3	6.7	4.6	[6.3]	
Nifty	24 May	101	77.7	101	71.8	6.5	7.3	5.4	
Moir	24 May	99	76.6	102	74.2	6.1	6.8	7.5	
AberDart	25 May	97	78.3	95	72.9	7.2	6.4	3.9	
Glenariff	25 May	99	75.9	98	73.1	6.4	8.3	5.8	
AberZeus	27 May	104	78.5	102	74.7	7.4	8.0	5.1	
AberMagic	28 May	102	79.9	100	72.1	6.5	8.1	3.7	
AberWolf	28 May	100	78.4	101	72.6	7.1	6.7	4.6	
Gosford	29 May	99	77.8	100	73.8	6.5	7.6	4.6	
Agaska	30 May	101	76.8	99	72.2	6.3	8.4	[5.9]	
Elyria	30 May	98	77.1	97	72.8	6.9	8.2	7.1	
AberGreen	30 May	102	77.7	101	73.6	6.8	7.8	5.1	

**Ground cover:** An indication of suitability for grazing or cutting. Higher scoring varieties are more suitable for grazing, whereas cutting favours leys with a more open growth habit, giving a lower score.

**Disease resistance:** Disease can reduce both yield and grass quality and is dependent on site and variety. Scores in the RGCL relate to resistance, so a higher score indicates a variety is more resistant to the disease.

The lists provide details of single varieties although most grass seed is sold within a mixture. This is because mixtures give the flexibility required in most farming situations and offer the benefits of the different species included. The range of characteristics found in different varieties within a mixture gives the ability to cover more soil types, weather patterns and livestock. If conditions were totally predictable, straights could give better results, but for the vast majority of grassland systems, mixtures are more suitable.

Germinal's National Agricultural Sales Manager, Ben Wixey, stresses the importance of using the lists: "Plant genetics are as advanced as animal genetics so warrant the same attention. The independently-compiled recommended lists act as a safeguard to know which varieties are best across a range of performance factors. They give grassland managers the confidence to make informed choices when planning a reseed."

To learn more about using the best grass varieties and excellent grassland management, join an upcoming series of webinars led by Germinal's grass and forage specialists. For more information, sign up to the Germinal mailing list: <https://germinal.co.uk/subscribe>

## HOW TO CHOOSE THE RIGHT GRASS SEED MIXTURE

- Does it offer a balance between quantity (DM yield) and quality (D-value)?
- Is it right for how it's going to be used? Grazing, cutting or both; short-term or long-term; type of livestock
- Is it tolerant of the typical conditions experienced on your land? Dry, waterlogged, specific diseases
- Are the varieties included on the recommended lists?



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## THE LATEST IN CUTTING EDGE FORAGE RESEARCH

*Forager catches up on the latest UK grassland research from around the UK.*

### DEVELOPING CLIMATE-SMART GRASS VARIETIES

Scientists at Aberystwyth University's Institute of Biological, Environmental and Rural Sciences (IBERS) have been working for many years to produce grass varieties with both the production qualities and stress tolerance livestock farmers need from their grassland.

Drought is a stress many grassland farmers experience and look to overcome. Festuloliums are beginning to offer a potential solution. They are hybrid grasses, bringing together a high-quality ryegrass with a deep-rooted drought tolerant fescue.

But not all festuloliums are the same; their differences coming from their 'parentage'. Following the success of breeding AberNiche, a festulolium with Italian ryegrass characteristics, a perennial ryegrass cross festulolium, AberRoot, has been developed.



*Festulolium field trial at IBERS*

AberRoot is a cross between an Atlas fescue found in the hot, dry conditions of North Africa and an Aber High Sugar Grass perennial ryegrass, also bred at IBERS. This means it has maintained sugar levels, with the persistency and versatility of a perennial ryegrass and the fescue's deeper root structure giving it greater tolerance of dry conditions. It is the only high sugar grass festulolium.

Bred by conventional plant breeding methods, it has been trialled successfully across the UK. Reflecting this success, it is the first perennial cross festulolium to be listed on the Recommended Grass and Clover List (RGCL), judged alongside the intermediate perennial tetraploid group. It is a long-term grass variety showing yield and quality advantages for grazing and cutting with good overall disease resistance and no specific weaknesses.



## UNDER-SOWING MAIZE

**Forager continues to follow the work being done on Trevase Farm in Herefordshire, where David Pursey has been under-sowing maize successfully for the last five or six years. Over the last year, David has hosted trial work, testing different grasses and festulolium with and without clover.**

Most farmers under-sow maize with an Italian ryegrass as it establishes well and grows quickly. The festulolium David is using, AberNiche, takes the positive attributes of Italian ryegrass and adds the stress tolerance of a meadow fescue.

Recent trial results show this stress tolerance of AberNiche has paid off.

Last year saw a very warm and dry spring, followed by heavy rain later in the growing season causing stress in many varieties exacerbated by damage at harvest. It appears the fescue properties of AberNiche helped it cope with these conditions. The AberNiche plots grew the most forage after the maize harvest, giving a 3,500kg DM/ha yield in March after grazing in the previous November.

A dry summer can increase potential for a shortfall of forage the following winter. Studies such as this continue to test grass varieties in challenging conditions. These results suggest a festulolium, like AberNiche, under maize can provide autumn grazing and early spring growth.



AberNiche plots at the end of February 2021

## QUALITY OF MULTI-SPECIES

**Interest in the benefits of sward diversity is gaining ever more momentum.**

Soil fertility, forage quality, drought tolerance and improved biodiversity to name a few. The on-going multi-species trial work at the Germinal Research Station (GRS) in Wiltshire continues to underline their value. As reported previously, the 2020 trial results showed highest yield in plots containing a mixture of legumes and herb species with multiple grasses. GRS Manager, Dr Jo Matthews,

comments: “Chicory and plantain contributed 60% of the total yield from mixtures in which they were included. This indicates they were the main drivers of the increased yields seen from these mixtures compared to standalone grasses. But the latest findings show even simple mixes of red and white clover can benefit both yield and protein quality. The highest protein levels were seen in mixtures containing white or red clover. This is most likely to be due to clover’s nitrogen-fixing abilities.” Protein and metabolisable energy (ME)



Multi-species trial plot at GRS

fluctuate throughout the season and is strongly influenced by when each species begins flowering/heading. Each species has its own growth cycle which impacts the sward, so more work is being done to establish exactly what this means for use on farm.

## COUNTRYSIDE STEWARDSHIP MIXTURES

**The multi-species trials at GRS also include some wildflower mixes eligible for countryside stewardship agreements.**

Results indicate it’s best to treat these mixtures like a crop, i.e. sow into a fine, firm seedbed and early enough to aid establishment. How well the wildflower mix established directly related to when it was sown, largely due to a lack of moisture. The seeds are small and some species slower to establish so need to be sown in good conditions with a fast strike or weeds can dominate. In the extremely dry 2020 season, monthly measurements showed the success rate tailing off from June onwards. Although it may be possible to drill beyond June in a wetter season, as payment is only made for areas where plants are established and to secure flowering in the year sown, sowing early is recommended.



# WHY CALCIUM IS THE SECRET TO UNLOCKING NITROGEN EFFICIENCY



Mark Tripney,  
ISoils Director

*Balancing calcium in soils is the foundation to achieving better nitrogen utilisation. And although doing this with agricultural lime is relatively cheap, easy to do and comes with numerous other benefits, as much as 40% of UK soil still has sub-optimal calcium levels. Forager talks to agronomist and ISoils Director, Mark Tripney, to find out more.*

Soil health, nutrient availability and efficient fertiliser use are some of the most talked-about topics in UK agriculture, and calcium can play a role in tackling all of them. Described as having both an ‘understated role’ on UK farms and the ‘forgotten nutrient’, the link between calcium, pH and improving fertiliser efficiency is one still needing to be better understood.

Where soil calcium levels are balanced, pore space is created which helps water percolation, root penetration and allows the soil to function aerobically as it should. Calcium also affects numerous biological processes in the soil, including nitrification. This biology flourishes when calcium is readily available.

### Invest in soil analysis

Before you apply nitrogen, or any fertiliser, start by doing a detailed soil analysis, so you really understand your soil. The tendency to use very basic soil tests which simplify analysis to

only include pH level, phosphorous, potassium and magnesium can be detrimental. Instead, choosing a more detailed soil report helps develop a better understanding of your soil’s nutrient levels. It enables you to identify what might be limiting the potential of your fertiliser applications and ultimately your forage, including inadequate calcium supply.

“My advice is to choose a broad-spectrum soil analysis which includes calcium, CEC (cation exchange capacity) and micronutrients,” explains Mark. “This provides an understanding of the balance between the main elements within the soil and ensures you are only applying the extra inputs you really need. And although more expensive than a standard soil test, the cost is easily recouped through the benefits detailed sampling brings to your business.

“Although pH is a good place to start, it won’t give you the full story. For example, your soil pH might be at the 6.5 target, but

it could still be short of calcium and not supplying enough of essential nutrient to your forage.”

An increasing trend on land receiving large volumes of organic manure is the effect of potassium on soil pH. It is not uncommon to find soils with an optimised soil pH of 6.5 but low calcium and magnesium levels. A simplified test would suggest there is no issue, leaving the crop and animals prone to the effects of a lack in both these nutrients due to the excess potassium.

“Calcium is almost always under-supplied as it is lost from soils continuously through various processes, including crop off-take. But by far the biggest losses relate to the use of inorganic fertilisers and leaching. Therefore, it should feature in nutrient plans every year,” advises Mark.

Table 1 lists the amount of calcium carbonate required to neutralise each kg of nitrogen supplied by these fertilisers.



TABLE 1. Calcium Carbonate (CaCO<sub>3</sub>) requirement to counteract acidification of nitrogen fertiliser applications

	Kg CaCO <sub>3</sub> required to neutralise each Kg N
Ammonium Sulphate	5-7
Ammonium Nitrate	2-3
Urea	2-3
Calcium Ammonium Nitrate	1.5-2.5
Calcium Nitrate	0

TABLE 2. The effect of soil pH on fertiliser utilisation efficiency

Soil acidity	Nitrogen	Phosphate	Potash	% fertiliser wasted
Extremely acid pH 4-5	30%	23%	33%	71.34%
Very strong acid pH 5.0	53%	24%	52%	53.67%
Strongly acidic pH 5.5	77%	48%	77%	32.69%
Medium acid pH 6.0	89%	52%	100%	19.67%
Neutral pH 7.0	100%	100%	100%	0%

Improve nitrogen use efficiency

At a time where there is ever-increasing focus on reducing carbon footprint at farm level, minimising inputs is important. Using fertiliser in the most efficient way possible is vital and if soil pH levels fall below 6, nutrients are locked up and fertiliser is wasted. Alongside this, fertiliser isn't a cheap input, and wasted fertiliser is wasted money.

Soil at pH 6 can waste almost 20% of fertiliser applications and reduce yield. Table 2 highlights the effect soil pH has on fertiliser efficiency. "Making sure your soil has an adequate calcium supply costs far less than wasting 20% of fertiliser as well as contributing to an improved carbon footprint," says Mark. "It is also important to understand soil with the right calcium availability is better able to sequester carbon and less prone to denitrification due to the greater stabilisation of soil organic matter."

Choose quality liming material

More farmers are moving towards precision application of fertilisers, and lime should be treated the same. The soil pH across a single field can vary significantly, especially where fields slope. Variable lime application can easily be achieved, especially with granular lime products.

The quality of agricultural lime is paramount. Too frequently product is bought on price not specification. Ultimately farmers must take responsibility for what they spread on their land, but suppliers also have their part to play in ensuring they meet the correct legal specification for agricultural lime. To address this, the UK Agricultural Lime Association (ALA) setup the Aglime Quality Standard (AQS). The AQS ensures all participating members meet the



1991 Fertiliser Regulations standard for lime as a minimum and measures the calcium and magnesium content of lime as well as its reactivity. This quality standard, endorsed by the AQS logo, gives farmers confidence in the quality of the agricultural lime they use.

Return on investment

"Liming with good quality material easily pays for itself," Mark concludes. "A recent case study using granulated lime on grassland silage in Scotland saw a spend on lime of £1,440 over two years generate increased silage bale production equating to a profit of £5,760 over the same period. This represents a return of 4:1 on the farm's initial investment. Ultimately healthier soils grow crops of better quantity and quality while also using fertilisers more

efficiently and helping reduce the carbon footprint of the industry."

Calcium should not just be considered for pH remediation on a five-yearly liming cycle. It should be part of your yearly nutrient toolkit and applied little and often to keep soil healthy and balanced.

**"IF SOIL PH LEVELS FALL BELOW 6, NUTRIENTS ARE LOCKED UP AND FERTILISER IS WASTED."**

MARK TRIPNEY

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# AVOIDING THE DOWNWARD SPIRAL WHEN BUFFER FEEDING AT GRASS

*If you need to buffer feed, follow the rules to maintain rumen health and butterfats without compromising sward quality. Forager talks to independent nutritionist, Hefin Richards.*

Hitting the sweet spot when buffer feeding can completely turn a herd's fortunes, lifting performance, supporting animal health and improving financial returns. But getting it wrong can rapidly lead to a downward spiral of poor grass utilisation, butterfats in decline, rumen health taking a hit and valuable feed resources wasted in urine and dung.

Sticking to some simple rules can avoid the decline, at the heart of which are measurement, planning ahead, choosing complementary feeds and offering them at the right time.

Nutritionist, Hefin Richards of Rumenation Nutrition Consultancy, says it isn't difficult to get buffer feeding right, but it can also be easy for things to go wrong.

"One classic mistake is to wait until you feel you have enough grass before turnout, which probably means you are waiting too long," he warns. "If cows are turned out late, they will very quickly have too much, and will soon be moving on to grass which has passed its best.

"Yields then drop and the farmer panics, putting more buffer feed in front of the cow and losing control," he says. "They may be reacting to what the cow tells them, but by that time it is actually too late."

Instead, he says it's far better to turn the cows out earlier for a few hours each day in a gradual process, and anticipate the grass coming down the line.

## Measure and plan

As part of that process, grass should be plate-metered weekly so there's a clear indication of the wedge building up ahead, ideally using grazing software for the purpose of making the job easier.

"This way, you know how much dry matter intake you can expect, and can plan to make up the shortfall," he suggests.

Making adjustments along the way is integral to success as intakes can vary widely in the face of different weather or growing conditions.

"You may, for instance, set up a buffer ration based on a grass dry matter intake of 9kg/day, but soon the cows could be grazing 12kg/day," he explains. "However, the farmer may continue feeding as though grass intakes are still at 9kg, which wastes and mismanages grazing and substitutes the buffer feed in its place."

Measuring grass quality is equally important as its composition can be variable through different growth periods.

"Intensively managed grass is not always a well-balanced feed and likely to supply more protein than the cow needs," he says. "As a rule of thumb, slower spring and autumn growth are the highest in protein, commonly reaching 25-30 per cent.

Excess protein is excreted as urea and ammonia which is not only wasteful and polluting but can be detrimental to animal health.

"Getting rid of excess protein has an energy cost to the cow, which means lost production and can hit fertility," he says.

## Choosing complementary feeds

Central to buffer feeding is choosing complementary feeds which balance the high effective rumen degradable protein (ERDP) in grass.

"The challenge is to capture and use this ERDP, turning it into high-quality microbial protein which will increase true milk protein," he advises.

However, sometimes ERDP can be broken down faster than the rumen microbes' ability to capture its nitrogen. This means high energy ingredients are required in the buffer feed, which help to fuel this process. These are typically maize and wholecrop silage, although other energy feeds such as sugar beet pulp and soya hulls – also low in protein – are potentially suitable.

"Many grazing farms run with a very low protein compound, some at around 12 per cent, in lower yielding herds," he adds.

However, higher production herds may benefit from small quantities of bypass protein, such as protected rape or soya, which is not broken down in the rumen but absorbed in the small intestine.

A further feature of high-quality grass is its low effective fibre, which can

negatively impact rumen function and depress milk fat.

"Young, leafy grass is particularly low in fibre, so if you can make the rumen more stable and work better, the cow will use more energy from the feeds going in," says Hefin.

He suggests nutritionally improved straw (NIS), rumen buffers or yeast can each be useful in this context, alongside the abovementioned high fibre feeds.

"Things which help maintain rumen health are important, and they can be



## KEYS TO SUCCESSFUL BUFFER FEEDING

- **Measure the quantity** and quality of grass regularly
- **Plot a grass wedge** and plan ahead
- **React to changing** growing and grazing conditions
- **Choose complementary** high energy, low ERDP feeds
- **Think about** using extra fibre, particularly when grass is young
- **Consider bypass** or protected protein in high-yielding herds
- **Time buffer feeding** to prioritise grazing where it is plentiful

**"IT ISN'T DIFFICULT TO GET BUFFER FEEDING RIGHT, BUT IT CAN ALSO BE EASY FOR THINGS TO GO WRONG."**

HEFIN RICHARDS,  
RUMENATION NUTRITION CONSULTANCY

more effective in improving performance than adding more concentrate," he says.

Buffer feeding also presents an opportunity to provide a balance of minerals, and these can play an essential role in preventative health.

"For instance, deaths through grass staggers are readily preventable through magnesium supplementation which costs around 2p/cow/day, or £3 for 150 days of grazing," he explains.

## Buffer feeding at the right time

The time of feeding can be critical to success and where grazing is plentiful, the aim is generally to maximise grass consumption.

"Blood sugars decline when cows are milked so they are ready to eat as they leave the parlour," he says. "This means it's far better to send them straight out to graze and offer the buffer feed once they've had their fill of grass.

"It's important not to think about grazing and buffer feeding as separate entities but bring them together in a carefully balanced ration," he adds. "It's never about turning out and hoping for the best; it's about measuring, predicting and choosing complementary feeds."





Southern Pitts Farm

# IS AUTUMN RESEEDING RIGHT FOR YOU?



*The fundamentals of reseeding are the same in spring and autumn, but which you choose depends on your farming system. Francesca Harding explores why and hears from one farmer favouring autumn reseeds.*

To maintain productive grassland, regular reseeding is an essential step. Keeping leys performing to their full potential helps ensure grass remains a highly cost-effective and nutritious feed for ruminants.

As leys mature the percentage of sown grass species decreases alongside an increasing proportion of native species and weeds. With higher levels of native grasses and weeds, there is a drop in both the yield and quality of grazed grass and silage. This can have a knock-on effect on livestock performance and increase the need for bought-in feed to buffer the shortfall. Preventing this deterioration comes down to good grassland management, with regular reseeding using high-quality grass varieties an essential step in restoring productivity.

Choosing when and how to reseed should be based on the farm system

and conditions, as well as forage requirements. Both spring and autumn reseeds can be effective but planning ahead and taking time to see the process is right is paramount to success.

Many choose an autumn reseed as this takes grassland out of production at a time when there is less pressure on grass availability. Reseeding in autumn allows the new ley to establish and reach its full production potential over winter, and gives the soil a chance to settle before travel and grazing begins in spring.

Conversely, autumn reseeds come with a narrower window of opportunity. Both weather and soil conditions are likely to deteriorate as the season progresses, so can reduce the chances of successful seed germination and establishment of the newly sown ley. But we hear from one farmer who uses the wetter autumn conditions to his advantage.

**Joe Doyle farms in partnership with Richard Morris at Southern Pitts Farm in Pembrokeshire, where they milk 400 Holstein Friesians. As a grass-based herd, reseeding plays a vital role in maintaining their production of milk from forage.**

“Since taking over the farm tenancy in 2015, we’ve really focused on producing the best grass we can,” explains Joe. “We began by reseeding the whole farm but now we’re starting to see performance drop in some leys, we aim to reseed around 20-25 acres a year.”

Running a spring block-calving herd, Joe opts for autumn reseeds. “Taking a field out to reseed in autumn makes sense from a labour point of view but also fits our grazing needs as we tend to have a better wedge of grass in autumn. In spring, we can find weeds start overtaking the grass before it establishes, but we don’t see this in autumn.

“When deciding which fields to reseed we look at their performance throughout the year. This includes the number of grazing rotations, how well they were grazed and how the cows behaved in those fields. Those not performing well enough are picked out for reseeding.”

Once fields have been selected for reseeding, Joe chooses the right grass seed varieties to suit his farm. “We normally look for high sugar varieties which are palatable but also durable and suited to the farm conditions.”

With a range of field types, Joe uses varying techniques to reseed. “For tidier fields in good condition with little poaching, we go for a direct drill approach. But in fields needing a little more attention, we tend to plough as this helps produce the seedbed we need. Whichever method we use, though, we always soil test well in advance to work out what the soil needs. This gives us time

to address any problems before we start reseeding.”

Joe normally starts reseeding in the first week of August to finish before the weather becomes too wet and cold. But if conditions decline earlier than expected, Joe puts in a cover crop such as winter corn. “Increasingly poor weather conditions put the pressure on finishing a reseed in what is a narrow window of opportunity. If this happens and we’re looking short on either labour or time, we call in a contractor so we don’t miss our chance. This is definitely worth it as missing the opportunity to reseed can be costly.

“As a tenant farm, it’s vital we make the most of the land we have to achieve good returns. Regular reseeding helps keep our grassland performing to its full potential by improving grass quality, which in turn improves milk quantity.”



Joe Doyle

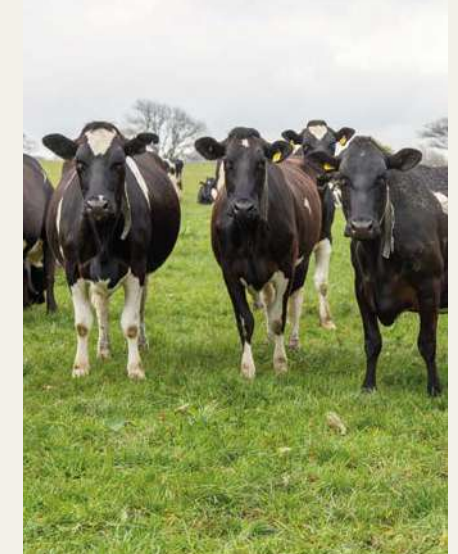
**“AS A TENANT FARM, IT’S VITAL WE MAKE THE MOST OF THE LAND WE HAVE TO ACHIEVE GOOD RETURNS. REGULAR RESEEDING HELPS KEEP OUR GRASSLAND PERFORMING TO ITS FULL POTENTIAL.”**

JOE DOYLE

## FARM FACTS

**Southern Pitts Farm, Pembrokeshire**

- **400** spring-calving Holstein-Friesians
- **6,500** litres/cow (aiming for 7,000 litres) at 4.3% fat and 3.6% protein. 4,000 litres a cow from forage
- **390** acres of grassland. Includes 250 acres grazing platform, 140 acres silage ground
- **Glanbia** cheese contract





*We revisit Tony Ball and Brian Hogan to find out how the season has started for them and learn about their summer plans. And we meet New Zealand farmer, Vaughan Jones, and hear how his pasture's resilience saw him through a dry NZ summer.*



## PRE-CUTTING ANALYSIS DETERMINES IDEAL START TO SILAGING

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

The warm weather in February hinted at an early spring on Vernon's Oak Farm, but the subsequent cold weather slowed progress. The April frosts hindered grass growth and, as in 2020, after a wet winter, the dry spring left Tony and Michael wanting a bit of rain.

The late lactation and 'far-off' dry cows were turned out in the third week of March with the high yielders zero grazing on top of a largely unchanged TMR by the start of April. The Ball brothers don't have enough accessible grazing land to have all the cows out, but those remaining indoors appreciated the change in diet to fresh grass. Yield increased as a result with robot visits initially under pressure. This picked up once the cows were settled on the new diet. The fresh grass analysis in April showed good nutritional value at 12.7% ME and 22.2% protein.

Ammonium nitrate (NH<sub>4</sub>NO<sub>3</sub>) with sulphur went on at the end of February with straight NH<sub>4</sub>NO<sub>3</sub> applied in early

April. Separated slurry was also used following the zero grazer. An initial 40 acres of early silage is being used to allow the field to be turned around for maize. The main first cut is early to mid-May after the maize is planted, the exact cutting date guided by pre-cutting grass analysis. The aim is to cut before NDF figures climb and to avoid excessive nitrates affecting fermentation in the clamp.

Keen to increase their use of red clover, another 60 acres is going into ground previously in either maize or arable crops for over 20 years. Other crops going in this year are 50 acres of an arable silage mix (barley/pea/vetch) for wholecrop and 55 acres of spring wheat as last year's wet conditions prevented winter wheat being sown after maize. The plan is to return the wholecrop acreage to grass early after a July harvest, with more grass following winter wheat in late August/early September. On top of this, another two or three fields are due to be reseeded in line with the brothers' on-going reseeding strategy.

### FARM FACTS

- **300ha** (750 acres). Includes 162ha (400 acres) grass leys, 73ha (180 acres) maize, 22ha (55 acres) wheat, 20ha (50 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).



Tony Ball

## NEW RESEEDS KEEP GRAZING GOING DURING HARSH WEATHER

**Brian Hogan, Horse & Jockey, County Tipperary, Ireland**

Grazing began as soon as the cows started calving this year on 29th January. With 85% having calved in the first five weeks, demand was high and with early February being wet, some on/off grazing was used to manage the conditions. To make this possible, Brian Hogan used spur roads and plenty of openings into paddocks.

The second round of grazing started at the end of March with the first fields having 2800kg DM and an average farm cover of 2100kg. This coincided with a cold spell so regrowth suffered. Brian found a field of AberClyde and the new reseeds kept the farm going during the harsh weather when growth elsewhere was poor.

Brian didn't have any other reseeding planned for spring this year as most of the milking platform is performing well, having been reseeded in recent years. He is trying some pollinator seed mix in

rougher, non-farmed ground though to increase his biodiversity without losing use of more productive land. And having put in a new cow road to another farm previously used for beef grazing, Brian is aiming to reseed it in July for silage and subsequent grazing of cows in spring and autumn.

Brian's silage plans include 80 acres on the heifer and silage blocks to cover dry cow and maiden heifer needs over winter. He also expects to make 2-3 good quality bales per milking cow from surplus grass as well as 2nd and 3rd cuts. This is fed when the cows are indoors milking in winter or during wet weather in spring.

The AberGain tetraploid planted in some wet ground grew about 10kgDM/ha/day over winter despite not receiving fertiliser since last August. Being a wet area, it wasn't grazed until early April and although the first clean out was difficult as the ground was still soft, Brian expects strong performance as the season progresses.



Brian Hogan

### FARM FACTS

- **99ha** (244 acres). Includes 53ha (131 acres) grazing platform
- **140 cow** spring calving, Holstein/Friesian herd with some Jersey crossbred
- **Calve from** 29th January to 15th April
- **7,000 litres** a cow a year at 4.43% fat and 3.66% protein
- **580kg** of milk solids per cow per year

## RESILIENT PASTURE HELPS SAFEGUARD FEED SUPPLY

**Vaughan Jones, Rakaia, Canterbury, NZ**

Vaughan Jones hasn't escaped the record-breaking dry conditions plaguing parts of the country, but resilient pasture has helped to bridge the feed gap.

Vaughan's 300-hectare dairy and 270-hectare cropping farm is near Rakaia, on the eastern side of the South Island. His coastal property is 30 metres above sea level with a flat topography.

The region is experiencing soil moisture deficits on the back of a very dry summer, but Vaughan's pasture has continued to persist under irrigation. He is irrigating 15mm once a week on the dairy platform, with very fertile, silt loam soil, but conditions are still very dry. The pasture managed to hold on though, seeing some good growth.

Vaughan has used AberLasting clover with AberMagic and AberGreen High Sugar Grasses for the past seven years, with

pasture renewal completed in spring, as cows are wintered on-farm using fodder beet. AberLasting, a cross of Caucasian and white clover, has continued to persist and thrive six years after it was planted.

About 15% of pasture is renewed each year, using one ryegrass variety with clover. Vaughan finds it easier to manage the heading dates and characteristics of pure swards, particularly as he doesn't have multiple characteristics in one paddock. Although not standard practice, he's been doing it for at least 10 years with good results.

Vaughan feels persistence is the main benefit of Germinal pasture, giving good and consistent growth. It stays in leaf growing well through summer and autumn. It's also palatable and the cows enjoy grazing it.

Vaughan is now preparing for the low temperatures he experiences during winter. As soon as there is snow on the nearby Southern Alps, conditions start to change becoming very cold and dry.



### FARM FACTS

- **570ha** (1,408 acres)
- Milking **1,100 cows**
- **5,316 litres** per cow per year at 4.87% fat and 3.84% protein
- **470kg** milk solids per cow per year





The top part of the clamp is more prone to losses from heating and wastage at feedout because it can be more difficult to compact during clamp filling

# KEEPING A COOL SILAGE HEAD AGAINST WASTE

*Want to keep the top of your grass clamp cool and totally free of waste? One farm manager has conducted his own clamp trial to find out how.*

**North Yorkshire farm manager Micheal Metcalfe, of JR Elliott, Bolton Hall Farms, Leyburn, admits to being very particular when it comes to making quality silage and conserving enough of it. And for good reason.**

Taking over as farm manager four years ago, having started on the farm in 2008, during the last 12 months he has increased dairy cow numbers by 30%.

The increase is all part of a major restructuring. This has seen the original 380-strong autumn block-calved Friesian x Montbéliarde herd added to with a further 120 spring block-calved Jersey x Friesian x Holstein crosses.

Both milking herds are located on one unit, with the spring-calvers replacing a sheep flock. A second unit is reserved for youngstock. The changes have been implemented to gear the business up for the next three decades, says Micheal, after experiencing poor profitability from lambs.

"By replacing spring lambing with spring calving it allows the same workforce to continue focusing on one workload peak at a time," explains Micheal. "Three months spring calving and three months calving in the autumn.

"It also helps even out milk production – with milk from both herds supplied to Wensleydale Creamery for cheesemaking."

With a firm focus on increasing milk from forage to reduce bought-in feed costs, the changes also make optimum use of homegrown grass – by maximising milk from grazing with the spring-calving Jersey cross cows, which Micheal says are well-suited to a grazing-based system, and from silage with the autumn-calved herd.

It is too early for figures from the spring calvers but out of the average 7,400 litres/cow yield for the autumn calvers, 3,600 litres come from forage, with butterfat and protein standing at 4.52% and 3.46% respectively.

The autumn calvers are also housed as soon as they have calved in late August. Part of the drive for increased milk from forage has included changes in the way silage is made.

"Two years ago we switched entirely to making our own silage and have had good results," explains Micheal.

"We already had our own silage trailers, tedder, rake and a JCB to buckrake, so we invested in our own mower and teamed up with a neighbour who bought a self-propelled forage harvester.

"Silage and grazing fields are reseeded every five years to maximise productivity. We take four silage cuts a year, beginning in May then cutting at roughly monthly intervals.

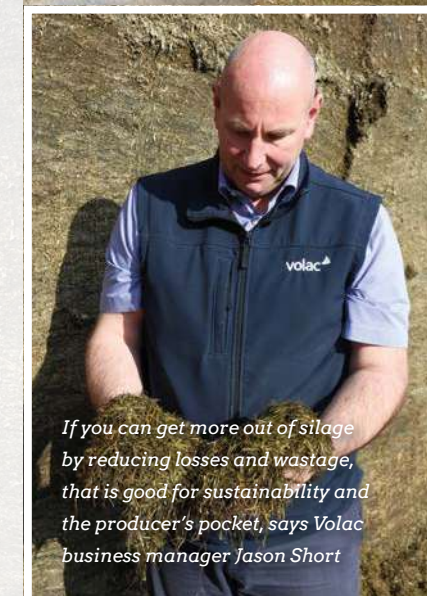
"We've also started chopping grass slightly longer to reduce clamp slippage and have switched to using Ecosyl additive."

With Ecosyl an integral part of the process, Micheal says the silage has been stable. However last season he experimented using different additives in different layers of the clamp to see if this could further improve preservation at the top. While one clamp was treated entirely with Ecosyl, a second was treated with Ecosyl up to 75% capacity with a different additive, Ecocool, used for the top 25%.

Both additives contain tailored amounts of the beneficial bacterial strain, *Lactobacillus plantarum* MTD/1, for improving fermentation. Ecocool, designed for drier silages, also contains a second beneficial bacterial strain, *Lactobacillus*



We wanted to make the best silage possible, says farm manager, Micheal Metcalfe



If you can get more out of silage by reducing losses and wastage, that is good for sustainability and the producer's pocket, says Volac business manager Jason Short

*buchneri* PJB/1, shown to reduce silage heating caused by aerobic spoilage. The decision to try Ecocool followed Micheal having previous experience of it for preserving wholecrop wheat.

By split-treating the grass clamp, the aim was to achieve a top-class fermentation in the bulk of the clamp from the Ecosyl, while also achieving the best protection against heating and spoilage at the top, where it is more difficult to consolidate and remove air.

"The top of the clamp is the most susceptible to heating and spoilage," explains Micheal. "We wanted to make the best silage possible, but do it as cost-effectively as we could.

"Although the clamp with the mixed treatment was first-cut and the clamp with all Ecosyl was second cut, they were ensiled at virtually identical dry matters of 32%, so it was a good comparison.

"Silage analysis showed quality between the two clamps wasn't much different, but there was zero waste with the clamp with Ecocool on the top."

In view of these results, this year Micheal ordered half his additive stock as Ecosyl and half as Ecocool. "We want the two additives on site so we can choose the correct one according to how dry the grass is when it's ensiled. Even if the silage is dry, we feel we can't go wrong.

"Putting the Ecocool on top gives a sort of a seal of cool silage at the top of the clamp. For us, this split approach is ideal because we have our own silage kit. If you're using a contractor, you might have to be more on the ball."

According to Volac business manager Jason Short, with increasing interest in producing more milk from forage and silage, Micheal is not alone in trying a split treatment technique.

"Normally we recommend Ecosyl for grass up to about 30% dry matter if it's well-consolidated and Ecocool for drier grass and for wholecrop and maize," explains Jason. But if there is a risk of losses from heating, for example if grass is drier and chopped a bit longer making it more difficult to consolidate, Ecocool is certainly a consideration.

"Split-treating isn't for everyone. For most grass silage made at about 30% dry matter, Ecosyl will be ideal. But if you're fastidious about silage-making, then treating the top few grass layers with Ecocool will certainly help target any problematical heating.

"At the end of the day, if you can gain more from silage by reducing losses and wastage, that has to be good for sustainability and the producer's pocket."



# FARMERS WEEKLY GRASSLAND MANAGER OF THE YEAR 2020 FINALIST

*James Muir was a finalist in the competitive grassland manager of the year category in the 2020 Farmers Weekly Awards. Kendra Hall spoke to James about what he's been up to this year.*



**“GRASS IS A CHEAP AND CONTROLLABLE COST SO WE RELY ON IT AS MUCH AS POSSIBLE.”**

JAMES MUIR

*James measures grass weekly and monitors cow performance closely to gauge feed efficiency*

James uses a New Zealand-style system focusing on high grass quality and minimising inputs to maximise milk from forage. All 166ha (410 acres) of their grassland at New Buildings Farm is grazed, with surplus going to silage in a multi-cut system.

James share farms with his wife, Lucy, and parents-in-law, Stephen and Leslie Brandon. In addition to the home farm, they began a 25-year tenancy last April on a 124ha farm on Harrowby Estate. The autumn-calving herd includes both externally sourced cows as well as another 100 brought in from New Buildings Farm.

“We run a simple system and it’s all about making the best quality grass. Grass is a cheap and controllable cost, so we rely on it as much as possible and focus on driving efficiency,” James explains. “The devil is in the detail, so we measure grass weekly and monitor cow performance closely to gauge feed efficiency. Other farms may produce more milk, but we’re able to keep our costs very low.”

His NZ Friesian-cross herd is rotationally grazed from February to late November.

Each paddock is split into two sections of 12-hour breaks with back fences to facilitate regrowth. The cows are followed in the rotation with fertiliser to a total of 200-220kgN/ha/year. “We need to put the best grass in front of the cows,” he comments. “To make decisions as timely as possible, we use a management app to track supply and demand in every paddock.” Under-performing paddocks are reseeded with high-performing ryegrasses - AberGreen, AberBann and AberGain. The whole farm is soil-tested every three years.

In 2020, grass production yielded 11 tonnes DM/ha, down 3 tonnes from 2019 growth due to a dry spell in May and June. This year, turnout at New Buildings Farm was a bit later than normal and initial grazing was good, but in early April when the rain stopped grass production fell by up to 60% of normal yields.

“During the second rotation the growth rate dropped to 27kgDM/ha, when normally it would be in the 50s or 60s. Luckily, we had enough grass in front of the cows that they could stay out day and night, but we did have to feed 4kg of 14% cake through the parlour.”

Cows on both farms are fed grass-only silage, with their multi-cut silage system gaining four or five cuts/year from the grazing wedge. Excess grass is used for silage with all paddocks having at least one cut to reset grass growth. There isn’t any silage ground as such but

## NEW BUILDINGS FARM

- 420 spring-calving New Zealand Friesian-cross cows
- 226ha, with a 166ha grazing platform
- 553kg milk solids/cow (1,425kg milk solids/ha)
- 6,350 litres per cow per year
- 70% milk from forage
- Replacement rate = 22%

## SHAW WOOD FARM

- 240 autumn-calving New Zealand Friesian cross cows
- 124ha, with a 100ha grazing platform

rented land less easily grazed is used for additional silage.

The cows come in towards the end of November, receiving silage and 3kg concentrate. Once dried off, they are given silage only until January when 4kg chopped straw is added. Once calved, the cows are on straight silage again, plus concentrate in the parlour. Pending weather and ground conditions, they’re turned out during the day as soon as possible and, when ground is dry, out permanently from mid-March. Heifers go on to grass from March on 24-hour rotation breaks and serving begins in late April.

James comes from a farming family but had a career outside agriculture before he and his wife moved back to join her family’s farming business. “The farm pioneered use of the New Zealand system and I’ve learnt a huge amount in a short period of time,” says James. “As well as learning from my father-in-law, I really value being part of a grassland-focused farmer group. It’s great not being alone when dealing with issues.”

The new site has kept them busy ahead of the herd’s arrival. They’ve built the infrastructure from scratch with substantial investment in facilities and re-seeding of fields. On completion of a new water system the cows went out on 20th March, but less-than-ideal growing conditions saw them brought back in

## SUPPORTING EXCELLENCE

Germinal recognises excellence in grassland management and the role of farmers as custodians of the land. It is proud to sponsor the Farmers Weekly Grassland Manager of the Year award, helping to lead the industry to higher standards and a sustainable future. The award celebrates farmers using best practice and their expertise in grassland management, striving to gain the most from their farms sustainably.

The shortlist for the 2021 award is due to be announced on 18th June, with the results revealed in an awards ceremony on **7th October 2021**.

and fed silage in the evening for the second rotation.

Another change this year is the use of 100% sexed semen to breed all their heifers and selected cows in late April. “We’ve always kept our calves and sold beef on to a family member, but we feel the time is right to make the change. We’re proud Arla farmers and very much on board with the cooperative’s decision. There’s a lot of potential for us to take advantage of our best genetics by front-loading the heifers, and hopefully we’ll see good results,” concludes James.



*Photos courtesy of Farmers Weekly*





*It might be summer, but autumn grazing needs careful planning now. Forager asked LIC Pasture to Profit Consultant, Piers Badnell, to chew the cud on successful grazing at the end of the season.*

While the main goal for this autumn's grazing strategy is to set up the start of spring 2022 grazing, additional successful grazing days in the shoulder of the season is a bonus, reducing feed and housing costs. We don't know what the weather will be like in the early part of next season, but it is good to have grass available to graze if conditions allow. Doing autumn grazing right helps you do this.

Well-managed grass, at the two and half to three-leaf stage, in September, October and November still has an ME of 12MJ and crude protein of at least 20%. Allocated correctly, cows will milk from it but watch body condition with the more Holstein-type animal and know how much she is actually eating.

#### Planning from August

Start setting up and planning both the quality and quantity of grass for grazing 2022 in August and begin building grass covers by lengthening the rotation. If you are not going to be grazing in late October into November, take some silage in August and September to bring average cover down. This avoids being left with heavy covers ungrazed going into winter.

Grass won't tend to grow much between November and February. To have grass available for grazing next February/ March most of it needs to be grown this autumn and early winter. The date you close fields, and how you manage them in September, October and November, has a big effect on what's available next spring.

The final round of autumn grazing involves closing a certain amount of the farm each week until all areas are closed up and cows housed. The field closed first in the autumn is grazed first the following spring. On the day grazing finishes completely, you need a range of grass covers that reflect your grass availability next spring.

#### Autumn rotational planner

The autumn rotation planner is a very useful tool to take you through the autumn and deliver good grass for spring. A crude version would be to start the last round mid-September to early October and graze 2% of the grazing area every day for the first 30 days, then 1% of the platform for the next 40 days. If you don't want to graze until the end of November, increase the number of days at 2% and reduce those at 1%.

The exact date you start your last grazing round depends on when you



intend to bring cattle in. Aim for your highest average farm covers, around 2,400 – 2,600kg DM/ha (depending on how long cows are out in the autumn), in mid-September/early October then start closing paddocks from mid to late September. Graze paddocks to a residual of 1,500kg DM and make sure any dead matter is cleared out to allow quality growth for next spring.

Don't sacrifice spring grass for the sake of a few extra days grazing in the autumn. It is crucial to measure grass and assess what you have. If grass availability looks tight, take some stock off the grazing area or supplement to keep the planner on target. AHDB's Forage for Knowledge service ([www.ahdb.org.uk/knowledge-library/grass](http://www.ahdb.org.uk/knowledge-library/grass)) publishes regular grass growth data from across the country.

#### Dry Matter

Autumn grass is still a very nutritious feed, but dry matter levels can vary from day to day depending on the weather so watch cow body condition. Some autumn calving herds serving in early November bring cows in at the end of October to give them time on a consistent diet. Others continue grazing into the early serving period, housing being dependent on ground conditions. For both, it is important dietary changes are slow rather than sudden. Monitor body condition scores on autumn grass and supplement as necessary.

With autumn grazing, you have to be flexible. Demand is in your control and can be managed by supplementation, but growth is largely determined by weather. Keep measuring grass growth, know what demand is and adapt where necessary.

#### INFRASTRUCTURE

- **Have the right infrastructure** so grass can be used even on wetter days in the autumn
- **Make a plan**, graze the wettest you dare and protect vulnerable areas of paddocks
- **Use separate paddock entrance** and exits to avoid soil damage
- **Think laterally about allocation** to make sure water troughs are accessible and grass is grazed out
- **Use on/off grazing** if conditions are wet.

**“YOU HAVE TO BE FLEXIBLE. KEEP MEASURING GRASS GROWTH, KNOW WHAT DEMAND IS AND ADAPT WHERE NECESSARY.”**

PIERS BADNELL





# PLAN AHEAD FOR LATE SUMMER WEED CONTROL

*Weed competition can still be significant in late summer and early autumn, so it's important to have your weed control strategy in place. Forager explores ways to protect your grassland from yield losses caused by weeds over the coming months.*

## SAFEGUARD YOUR AUTUMN RESEEDS

**If you've chosen this autumn to reseed any poor-performing leys, make sure you protect them with the right weed control.**

Late summer and early autumn can be a popular time for reseeding as yield loss is minimised and new seedbeds have plenty of time to settle and establish over winter. However, weed competition can be significant so to maximise the opportunity for young grass to establish and flourish, it's imperative you check new leys regularly for any signs of weed infestation and act quickly to control them.

Problem weeds such as chickweed and seedling docks pose a threat to grassland productivity, even in small numbers. They compete for space, light, nutrients and water and smother out nutritious grass. With new leys it's important to tackle these weeds early before they damage the ley's performance and become a more significant problem.

Controlling weeds is easier and cheaper when they are small, and the roots haven't propagated or had the opportunity to grow bigger and deeper. Weeds are best controlled in new leys when the grass is at the two-to-three leaf stage.

Many grassland herbicide products dictate grass should be established, i.e. over a year old at the time of treatment. However, products are available for



Problem weeds such as chickweed can threaten grassland productivity

use in new sown grass leys that can be applied from as early as the three-leaf growth stage.

Envy from Corteva is a selective herbicide ideal for use in new sown leys. Its wide weed spectrum includes chickweed, mayweeds, buttercups, dandelions and seedling docks and has good grass safety when used on

new sown leys. Envy is available in a 3-litre pack and can be applied any time between 1st February and 30th November at 1-1.5 litres/ha, making it ideal for autumn reseeds.

The new Corteva Forage App is now available to download and can help determine which weed control product is best for your situation.

## REJUVENATING GRASSLAND

**For fields where grass is losing out to weeds but is a permanent pasture where a full reseed is not possible, effective and long-lasting weed control, alongside a nutrient programme and grass utilisation plan, will transform the field's productive capacity.**

Rejuvenating pastures with good weed control is quicker and cheaper than establishing a new sown ley and avoids potential issues with soil erosion and poaching. Forefront T, a high-performing grassland herbicide from Corteva, delivers on both counts. The product moves to the roots of weeds

delivering long-term control of tough, broad-leaved weeds, while at the same time being very safe to grass.

Where tough perennial weeds, like docks, thistles, chickweed, nettles, ragwort, buttercups and dandelions are competing and winning against grass for light, nutrients and space, the yield losses can be considerable. A 10% weed infestation means 10% less grass growing for feeding livestock.

A 2-litre application of Forefront T can provide a fast solution to controlling weeds and put grass back on track. Forefront T can only be used on ground

grazed by cattle and sheep, with stock returning seven days after treatment or when the foliage of any poisonous weeds such as ragwort has completely disappeared. For silage or hay fields, Forefront T can be sprayed after the last cut, when weeds have regrown to a size suitable to treat.

Forefront T needs to be prescribed by a BASIS-qualified agronomist to ensure compliance with the stewardship obligations guiding its use. Call our Hotline on **0800 689 8899** for more information.

Where weed infestations threaten yield, Forefront T can help.

## AFTER WEED CONTROL

**Taking out high populations of weeds can leave areas with little or no grass. Although grass is a great coloniser and removing weeds helps this, overseeding or stitching in new grass can be warranted when high weeds population infestations have been removed and you want more productive grass species to take over and drive productivity gains.**

After herbicide applications of products such as Forefront T, an interval is required before re-seeding. Intervals vary by both by product and whether it is grass or clover being sown back in. Review the table below or read the label to make sure you plan any follow-up seeding at the right time interval:

**Interval required between treatment and overseeding/stitching in**

Product	Grass	Clover
DoxstarPro	4 weeks	6 weeks
Thistlex	6 weeks	6 weeks
Forefront T	4 weeks	16 weeks
Envy	4 weeks	12 weeks
Leystar	4 weeks	12 weeks



Dock removal can leave bare areas without grass



# Breathe new life into old pasture.

## Forefront® T

HERBICIDE

Forefront® T is a high performance herbicide.

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

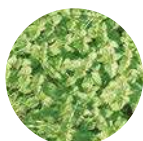
Use it on permanent pastures or grazing leys to control long established or high populations of weeds.

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

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



Docks



Nettles



Thistles



Buttercups



Dandelions



Ragwort

