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ISSUE 15: Winter 2017/18

FORAGER

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NEXT GENERATION

How Fred Love built his flock from the ground up | 5



Planning your soil and muck nutrient management strategy | 6

Matching dairy genetics to grass performance | 10



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HOME GROWN FEED FOR SUSTAINABLE FARMING

Page 4: Editor's Note

Page 6: Test soils and muck: Now's the time to plan your nutrient management strategy.



Page 8: Rethinking the benefits of slurry: How a Welsh dairy farm increased their silage production by 54%.

Page 10: Breeding cows for grass: Irish farmer is breeding dairy cows to suit his grazing system.

Page 12: Grassland weed control: Timing is everything when it comes to controlling pasture weeds such as docks, thistles and nettles.

Page 14: Thinking outside the box: Northern Ireland beef farm is producing 1,400kg of beef liveweight per hectare.



Page 16: Soil and forage: Soil is the bedrock for success for organic dairy.

Page 18: Grazing festulolium: An unconventional Dexter beef farm benefits from reseeding with a new hybrid grass.

Page 20: All in the Chop: Straw's important role in dairy and beef cattle nutrition.

Page 23: Silage sense: Learn lessons from this winter's open clamps.

Page 24: Trial results: Lamb gains on reseeded pasture comparable to creep-fed lambs.



Page 26: Forage crop menu: Six innovations to help farms produce more milk and meat from forage.

Page 28: Forage Bites: Digestible knowledge on all things forage.



From the cover

Page 5: As part of Forager's new Next Generation series, we speak to 25 year-old new entrant Fred Love to find out how he's built a 1,000 ewe flock from nothing and his plans for the future.

Page 30: Chewing the Cud: How sheep and forage leys can benefit arable farm rotations.



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Editor's

NOTE

Now's the ideal opportunity to carry out your own farm and forage personal development plan and challenge your business for the year ahead, writes Aly Balsom.

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As the end of the year comes into sight, most employers outside of the farming industry will be sitting down with members of their team to do a personal development plan (PDP) and review how the year's gone. I wonder how many farmers take the time to do the same.

Life is so hectic in the farming world, that reflection can often seem like a luxury when there's so many other things that need doing, but it's something that could be hugely beneficial.

It's a time to not only think about what went wrong, but what went right and what can be improved in the year ahead.

The Chartered Management Institute outlines the following objectives of a PDP:

- Establishing aims and objectives - what you want to achieve or where you want to go, in the short, medium or long-term in your career.
- Assessing current realities.
- Identifying needs for skills, knowledge or competence.
- Selecting appropriate development activities to meet those perceived needs.

Perhaps these four points are a good place to start. And whether you're a farm owner, manager or member of a farm team, all areas are relevant. It's also crucial whatever the

stage of your career - after all, personal development is a continuous lifelong process.

Questioning and reviewing should be focused on whole business objectives, but also on specific areas. Forage being one. Appraise your forage stocks (see page 23). Could you have done better with harvest or clamp management? Are you honestly

adhering to the basics such as soil and slurry testing? (see pages 6-8). Could you expand your knowledge by

attending a farm open day or technical event?

Have you challenged yourself to try new things is another big one. If not, what are you going to try in the next 12 months? (see new forage options on pages 26-27). Only by stepping out of our comfort zones will the farming industry be truly able to thrive into the future.

New entrant, Fred Love (see opposite page) is a great example of someone with a plan, and is our first profile in our new Next Generation series. He has an end goal in his sights and he's open to trying new things, such as collaborating with arable farmers to achieve his objectives.

Northern Irish beef farmer, Sam Chesney (see pages 14-15) is also continuously monitoring and reviewing his business's performance and provides a mantra we could all benefit from in 2018:

"We need to be very proactive and try things to see if it works. If it doesn't, we won't do it again." 

“ Only by stepping out of our comfort zones will the farming industry be truly able to thrive into the future. ”



Next generation

As part of Forager's new Next Generation series, we speak to 25 year-old new entrant Fred Love to find out how he's built a 1,000 ewe flock from nothing and his plans for the future.

It's taken Fred Love five years of grit and determination to build up his flock from barely nothing to nearly 1,000 strong.

During that time, he's saved every penny from shearing rounds in Nottinghamshire and New Zealand and invested it in sheep, electric fencing and grass mixes to convert a 61ha (150 acres) arable farm into a grassland system.

He has his non-farming parents to thank for securing the farm itself, but it's his efforts which have resulted in the ever growing sheep flock and fledgling suckler herd.

From day one, he has been focused on using EID to record and select the best Lleyn replacements possible. More recently, Aberfield genetics have also started to be introduced.

He explains: "I've always wanted to have a closed flock and sell breeding stock. I think the best way is to grow by breeding your own. I'm quite into recording so I've been recording on a basic scale from the start."

At present the farm is understocked at three ewes per acre, which has led to grazing management challenges and is one of the reasons for introducing beef. The system is reliant on temporary electric fencing, which is used to mob and cell graze. Fred adopts a five year reseeding policy using perennial ryegrasses and white clover mixes, with red clover added to the ley in 30% of ground. This is used for finishing and silaging.

The flock is also outwintered on an arable farm 20 miles away, where 61ha (150 acres) of turnips and forage rape have been drilled this year as part of the arable rotation.

"We're quite heavy clay so we couldn't run sheep here in the winter. He's got very stoney, light land so it's suited for grazing," explains Fred.

This arrangement also future proofs the system, with Fred aiming to double stocking rates at home, which will mean that the out-wintering land will be needed to manage growing numbers all year round.

Read more about sheep and arable collaboration on page 30. 

In the HOT SEAT



Name: Fred Love **Age:** 25

Farm: Love Farming Ltd, Retford, North Nottinghamshire

Acreage: 61ha (150 acres) owned and 61ha (150 acres) rented

System: 1,000 predominantly Lleyn ewes plus 26 Shorthorn cows

What's the biggest challenge you've faced to date?

Money. I've never taken a wage out of the farm. It's been tough. Now it's got to the point where I have quite a lot of sheep and we're turning a corner to make money.

What do you think your biggest challenge will be in the future?

Decent labour. I'd like to get to the stage where it's too big for one person, but it's not a livestock area round here so getting decent, reliable labour is hard.

What's been your greatest success?

My goal was to get to 1,000 ewes in five years. I wasn't quite there, but I got to 900 so that's quite an achievement.

Where do you see yourself in 10 year's time?

I'd quite like to take on a tenancy somewhere. Big scale farming is what I aspire to, so 4,000 to 5,000 ewes. There are big opportunities round here once we can persuade arable farmers as to the role of sheep in helping to control blackgrass.

Name three things in your life which are key to your success?

My Rappa electric fencing trailer, my dogs; Hank, Mist and Pip and our farm vet.

What's the best bit of advice you've ever received?

Surround yourself with positive people.



Test soils and muck to unlock potential

Now's the time to plan your nutrient management strategy so you're ready to go in the spring. Aly Balsom takes a look at what areas farmers should be thinking about and what's changed in terms of management recommendations.

It makes sense to grow as much homegrown forage as possible to save on bought-in feed costs, but farmers have as much to gain in reduced fertiliser costs by placing emphasis on home produced slurries and muck.

That's according to Germinal's Bill Reilly who believes many farmers have the potential to lower their fertiliser bill and improve farm performance by taking a different approach to muck.

He says testing muck and soil is the number one starting point - only by doing so will farmers know their nutrient requirements and the true nutrient value of what they have on farm.

He explains: "Testing muck enables farmers to make the most of natural by-products that have the potential to improve farm productivity and also help soils by

feeding the microbes and building organic matter."

ADAS Agricultural Consultant, Will John is in agreement and emphasises the importance of soil testing all fields every 3-5 years.

He says: "Until you know the nutrient status of soils, you can't forward plan fertiliser and manuring strategy. If fields are deficient in P & K, you can adapt your fertiliser and manuring plan accordingly. If you have high indices, there are opportunities to make cost savings."

Slurries and FYM

In Bill's experience, only a "tiny percentage" of producers test their slurries and FYM (Farm Yard Manures). However, he believes it's well worth the investment (see box). Although set values for nutrient content from the Nutrient

Management Guide (RB209) can be used, there is a chance that on farm supplies can vary in their make-up.

"What goes in the animal dictates what comes out. With so many different production systems, it is likely there is some variation in book values," he comments.

Will emphasises the importance of testing manures - and particularly slurry - just prior to application, otherwise nutrient values can vary considerably. Careful timing is also vital when testing soils. RB209 advises that soils are tested six weeks after organic manures have been applied and six months from limestone and fertiliser application (excluding straight nitrogen). As a result, testing in the spring may be more appropriate for farmers who have applied fertiliser in late autumn.

Soils

Bill says there's a real need for farmers to embrace soil testing, considering the recent AHDB reseeding survey which showed only 30% of English soils were tested on a regular basis and only a quarter of those were at the ideal pH for grass production of 6-6.5.

He adds: "Soil testing may identify paddocks that are underperforming and show where you can improve performance by applying suitable

nutrients, rather than going in to do a full reseed."

He particularly highlights the importance of testing soils before renting or purchasing any land.

"You wouldn't buy a second-hand car without taking it for a test drive. Before you take on any land, the first thing you should do is soil test. I would then base the price I pay on the soil test."

Compaction

At the same time as soil testing,

Will advises looking for signs of soil compaction by digging soil pits across the field. He says assessing and addressing any issues is a must considering the potential negative impact to performance.

Bill agrees: "You can get a 22% reduction in grass growth where there's been compaction from machinery. That could be a vast sum of money to make up - whether that's concentrate to buy in to bridge the gap or nutrients to apply to improve soil health," he explains.

Continues onto page 8

How to establish nutrient supply and demand

How to take a slurry sample

- Health and safety is a must - don't climb down into pits or lean over the edge, and ensure it's a windy day to reduce risk from toxic gases.
- Ensure a homogeneous sample.
- Use a jug and funnel to decant 250ml into a sample bottle for analysis.
- Cost: About £50.

How to take a Farm Yard Manures (FYM) sample

- FYM can vary hugely within a stack so it's important to get a representative sample.
- Take representative samples from 10 different points on a heap.
- At each point dig a hole 0.5m deep and take a 1kg sample.
- Mix on a plastic sheet.
- Put 0.5kg in a sample bag, expel air and send to lab.

How to take a soil test

- The sample must be representative.
- Choose problem fields (e.g. those that may have been underperforming).
- Walk in a W pattern across field and take 25 samples down to 7.5cm on grassland and combine samples.
- Do not sample where muck heaps or feeders have been or on headlands or hedges.
- Test different soil types, and areas known to be different, separately.
- Cost: About £8-10 for a basic test for P, K, Mg and pH.

Watch Bill Reilly's video on how to test FYM from his time working for AHDB at www.ahdb.org.uk. You can also see a guide on how to take a slurry sample. A "Healthy grassland soils pocketbook" is also available at www.dairy.ahdb.org.uk

The Nutrient Management Guide (RB209) - What's changed

This summer, the RB209 guidelines were updated, refreshed and simplified. Some of the key changes affecting grassland farmers are outlined in RB209 Sections 1, 2 and 3 and include:

- Grassland recommendations have been revised to cater for different levels of grassland production, without linking to animal production systems (beef, sheep, dairy), milk yield, stocking rate or concentrate use.
- Whole season N requirements and N application sequences are provided separately for cutting (see table on next page) and grazing situations.
- The recommendation tables indicate how it is possible to adjust total N requirements according to soil nitrogen supply (SNS), grass growth class (GGC) and season rainfall to produce target levels of homegrown forage.
- A method for assessing risk of sulphur deficiency is provided based on soil structure and climate.
- Potash content for FYM has been revised.
- Total sulphur and magnesium content of sheep FYM has changed.
- Potash content of cattle slurry has been amended.

You can read the full guidelines at www.ahdb.org.uk



Analysing soils and mucks enables accurate use of home produced nutrients and the potential to reduce bought-in fertiliser costs.

Nitrogen recommendations for grass (RB209)

Target annual DM yield ^(a) (t/ha)	N application rate (kg N/ha)				Total N applied ^(b) (kg N/ha)
	First cut	Second cut	Third cut	Fourth cut	
5-7	70	-	-	-	70
7-9	80	50	-	-	130
9-12	100	75	75 ^(c)	-	250
12-15+	120	90	70 ^(c)	30	310 ^(d)

- (a) DM yield as harvested in the field for all cuts combined. Does not include spoilage in the clamp. Fresh yield is four times these values if the silage is 25% DM.
- (b) As manufactured fertiliser and crop available from organic materials.
- (c) If previous growth has been severely restricted by drought, reduce or omit this application.
- (d) This total N could be applied to a 3-cut system (yielding around 15t DM/ha) with the fourth cut recommendation of 30kg N/ha being split between the second and third cuts.

The herd currently produces 24% of its milk from homegrown forage - a figure Hywel says is continually moving upward.

Tyn Celyn Farm harvests 202ha (500 acres) of silage from less than 69ha (170 acres) of Aber High Sugar Grass a year based on a three cut system.

The Aber High Sugar Grass mixture selected from Corwen Farmers, includes diploid and tetraploid perennial ryegrasses, white clover and Timothy.

The mix, which is approximately a 50-50 combination of intermediate and late heading perennial ryegrass varieties, along with seven percent Timothy and 35% tetraploid varieties, gives adequate ground cover to tolerate wet winter grazing of sheep and has a narrow heading date to maintain quality through multiple silage cuts.

"On the previous two cut system, we were yielding six tonnes of fresh weight/acre from the first cut in early June and five tonnes of fresh weight/acre from the second cut in mid-August," Hywel explains. "Not only has fresh weight tonnage increased by 54% with the new three cut system, but our forage quality has improved due to the shorter growing windows." 



By investing in a 1.6 million gallon slurry lagoon in 2015 and housing cows indoors year-round, Hywel Roberts (left) and his son, John, have been able to increase the number of silage cuts they take a year from two to three.

CASE STUDY Slurry rethink benefits forage By Laura Mushrush

Routinely testing slurry and investing in a new slurry lagoon has enabled the Roberts family to better utilise home produced nutrients and boost forage production as part of an overall farm strategy.

"We're in charge of the slurry now - it's not in charge of us," says Hywel Roberts of Tyn Celyn Farm near Corwen.

The investment in a 1.6 million gallon slurry lagoon in 2015 proved a big turning point on the 142ha (350 acre) family farm, which consists of 210 all year-round calving Holstein Friesians, managed by Hywel, his wife, Rose, and their son, John.

Since then, the business has been able to make substantial production increases. This, along with the decision to install milking robots and house cows indoors year-round, triggered the chain reaction that not only increased the farm's milk

production from 9,500 to 10,500 litres, but also increased their silage cuts from two per year to three.

Hywel says: "Before we had the large pit installed, we were very limited in how and when we could utilise slurry, based on when we ran out of storage space. However, now we can have the ability to apply it when it will best suit our grass."

Everything from the silage we harvest, slurry we apply and the soil our grass grows in, is tested.

Hywel is also convinced that slurry testing is one of the most crucial components to successfully capturing the benefits of slurry and reducing outside inputs.

In the farm's most recent analysis, the 8.78% solids in the slurry contained 13.32 units of nitrogen, 5.10 units of phosphate, 20.76 units of potash, 7.64 units of magnesium

and 7.92 units of sulphur per 1,000 gallons. This came to a £106 per hectare slurry fertiliser value. To keep in compliance with the Glastir Welsh environment scheme, at least 70% of this slurry is applied with a trailing shoe, which is done by a contractor, and the other 30% with a tanker.

Hywel adds: "The nitrogen, phosphate and potassium nutrients found in slurry has really helped us cut our inputs while maximising our outputs. Everything from the silage we harvest, slurry we apply and the soil our grass

grows in, is tested. This allows us to make application decisions that best utilise our available nutrients from the slurry."

A focus on forage

The shift in management has not only allowed the family farm to take control of its slurry, but also to focus more closely on its forage production.

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Genetics form basis for forage success

Cow and grass breeding go hand in hand when it comes to maximising production from forage, as Aly Balsom finds out from Ireland.



Irish producer Barry Bateman is so convinced as to the value of breeding that he is one of a group of 17 forage focused farmers that have set up their own genetics group to produce high genetic merit bulls matched to their specific management type.

At the same time he has signed up to Teagasc's national grass monoculture project to better understand which are the best grasses to complement his farm type.

The idea is to produce fertile, natural grazing cows which will calve in a 10 week block to match spring grass growth. Selecting quality grasses and close grazing management will then ensure maximum forage palatability and dry matter intakes.

"Maximising production off grass is what my game is about. We have always been grass based. My father won a national award for grass farming in 1963, so it's always been in our blood," says Barry (left).

System shake up

Although grazing has been a family focus for many years, 2001 was a turning point. It was then that they decided to move away from their traditional Holstein base, calving in a spring and autumn block and instead cross breed to Jersey. After a number of family reshuffles, the herd at Moneen Farm, Bandon, County Cork, was then moved to a spring calving block.

"We went to a spring block due to labour and the Dairy Gold Co-op was moving away from supporting winter calvers," explains Barry, who farms with his wife, Olive.

With a 10-12 week empty rate of 20-22% in the Holsteins, Barry viewed cross breeding as the only option to benefit from fast improvements in fertility thanks to hybrid vigour. Empty rates now sit at 9.5%.

Barry adds: "If we had continued with Holsteins, there's no way we could have had a tight calving period and our labour wouldn't have worked as well as it is."

The farm now runs 225 cows yielding 5,174 litres a cow a year at 4.85% fat and 3.88% protein. The herd is currently on target to produce 500kg of milk solids a head - a figure which has improved over the last couple of years as the herd has matured. Breeding now involves crossing to Jersey, then grass based Friesian sires and back again (see box). Cows receive around 800kg of concentrate a head a year.

Grass utilisation

Cows go straight out to grass as soon as they calve and are rotationally paddock grazed. Barry cites grazing management as the cornerstone to grass utilisation (see right).

However, he believes selecting top performing grass varieties is a must and reseeds about 8-10% of land a year. In Ireland, grasses are ranked using the Pasture Profit Index (PPI), which gives an indication of the relative profitability difference of a variety when compared to the base values. Only varieties that have completed a minimum of two harvest years in the Irish Department of Agriculture, Food and the Marine Frequent Cutting Protocol have a PPI value.

The Batemans are one of a number of Irish farmers

involved in Teagasc's monoculture trial. This is designed to assess the top performing grass varieties (based on PPI) in different farm situations.

Barry has grown a number of varieties as monocultures including Twymax and Drumbo, but has been particularly impressed by the Aber High Sugar Grass variety AberGain, which was the top performing variety based on PPI in 2015.

Initially this was grown on off-lying land grazed by youngstock, with Barry subsequently being impressed with youngstock growth rates and grass yields. Since then, 5ha on the milker's grazing platform was reseeded with the variety.

Barry comments: "The AberGain is performing very well. It has grown 15.4tDM/ha up until 20th September. It was also fantastic in the spring when it grew 2.8tDM/ha up until 10th April... Aber varieties have worked well for me. They've been palatable and have grown large quantities of grass and that's very important to a grass system."

Overall he believes PPI has the potential to work as well as cow EBI by providing greater confidence in selecting suitable grass varieties. "There's huge possibility for PPI in terms of matching grass varieties to the type of farm you have. Soil structure or wet or steep land have a big impact on how grass grows," he says. 



Cow choice and grazing management

COW GENETICS

Jerseys:

- New Zealand type Jersey sires selected based on Economic Breeding Index (EBI) scores of over 220 - limits choice to about 8-9 bulls at present. (EBI is similar to PLI in the UK).
- Fertility built into EBI so the hope is this trait is carried through.
- High milk protein kilos also prioritised.

Friesians:

The "Forge Group" discussion group has set up its own "Forge Genetics" group to produce high EBI Friesian bulls, specifically suited to grass systems.

- 17 farms and 4,000 cows in group.
- All herds high EBI, grass focused, spring block.
- Highest parent average bulls from each herd genomically tested.
- Top 5-6 bulls on genomics used for AI.
- Bulls produced in top 1% of bulls across Ireland based on EBI.

GRASS MANAGEMENT

- 3-6 entrances per paddock to enable early grazing and avoid poaching.
- 3ha paddocks on average and 12-24 hour grazings.
- Good establishment of new leys prioritised - good seed bed, fine tith, rolled twice and post emergence spray used.
- First grazing of new leys viewed as vital in promoting early tillering - cows enter reseeds at 2,000-2,200kgDM/ha.
- Generally enter paddocks at 2,800-3,000kgDM/ha grazing down to 1,550kgDM/ha.
- Soil tested every second year.
- 80% land index 3 and 4 for P and K - targeted fertiliser application based on indices.
- Land limed when needed - average soil pH 6.3-6.5, lowest 5.8.
- Aim 9-10kgDM intakes from grass and 3-4kg concentrates in parlour at start of season.
- Silage only buffer fed in terrible weather or poor grass growth.

Timing crucial for grassland weed control

Luke James visits a family farm in Shropshire where owning and operating their own sprayer is key to keeping the grassland weed-free.

Controlling pasture weeds such as docks, thistles and nettles is, for Chris Paddock, largely about timing.

"If we can spray at the right time, early in the spring when the target weeds are at the optimum growth stage, then we generally find we can stay on top of the problem," he says.

It's this that provides the perfect justification for the business to run its own sprayer - enabling them to pick their moment to go when the conditions for spraying are right and the weeds are at their most susceptible.

Chris adds: "We have a modern machine that is quick to attach and simple to operate, and has the right level of technology for our situation to ensure we are doing the job efficiently and accurately."

Chris, who farms at 170ha (420 acres) Burway Farm, Ludlow, with parents Philip and Nichola, recently upgraded to a Kuhn Optis mounted machine, with a 12 metre

boom and 1,000 litre polyethylene tank, which makes a light and manoeuvrable unit when run on a 100hp John Deere 6310 tractor.

"There are a number of standard features on the new machine that we find particularly useful," he adds. "Firstly, there's the induction pipe that allows the tank to be filled really quickly straight from a pre-filled IBC. That's a real practical benefit as we have low water pressure, so this saves a lot of time compared with filling from a hose.

Operationally, features such as hydraulic height adjustment and electronic in-cab control mean we can be more targeted in our spraying. At the same time, the configuration of a separate clean water hopper and an induction hopper makes filling and washing out safer and more straightforward than their previous machine, believes Chris.

"There are also fewer filters to maintain, with just one for each of three boom sections rather than one at each of the 24 jets,

and road lights are fitted as standard," he says.

Ease of operation and maintenance, alongside the ability to apply absolute timeliness to spraying operations, certainly helps to justify the Paddock family's decision to own and operate their own machine. It also sits well with their philosophy of self-reliance, which applies right across a mixed farming enterprise that includes around 40ha (99 acres) of cereals and 130ha (321 acres) of grassland. The family maintains a 30-cow suckler herd, with half being pedigree Limousins, and buys in up to 200 store cattle. There is also a flock of 300 Texel-cross and Beltex-cross breeding ewes. All cattle and lambs are finished on the farm and mainly sold through Ludlow livestock market, where Burway Farm stock is renowned for its quality.

"We grow wheat and barley to feed at home and aim to maximise the productivity of our grassland to

keep bought-in feed to a minimum," explains Chris. "We run our own combine, round baler and small baler, and have our own ploughing, cultivation and drilling kit. As far as possible we operate without the need to call a contractor. As with the spraying, it means we can go when we need to go, to make best use of the good conditions when they arrive."

Such an approach inevitably makes for some busy periods for Chris and his parents, so seasonal assistance from Chris' brothers Dave and Dan is valued by the family and is an important element in the on-going success of this business. **F**



Chris Paddock has opted for a sprayer that is simple to operate but with the right design features and technology to ensure an accurate and efficient operation across grassland and arable enterprises.

Operating your own sprayer

It is a legal requirement for anyone purchasing or spraying agrochemicals to hold the appropriate Safe Use of Pesticide (PA) certificates.

In the case of a boom sprayer similar to that used by Chris Paddock, this will include the PA1 Foundation Unit (or equivalent) and the PA2 certificate (boom sprayer, mounted, trailed or self-propelled).

Details on obtaining the appropriate qualifications are available at www.nptc.org.uk or www.hse.gov.uk

Regular sprayer testing is required for most farm assurance schemes and is recommended. It is a legal requirement for all machines over five years old to be tested on a recorded scheme. More information on sprayer testing is available at www.nptc.org.uk

Spraying accuracy at Burway Farm is aided by hydraulically adjustable boom height whilst use of a stand-alone GPS system is proving invaluable for applying agrochemicals and fertiliser on grassland.



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Thinking outside box boosts beef production

Not being afraid to try new things, whilst adhering to the basics of forage management, is proving the formula for success for one Northern Irish beef farmer, as Aly Balsom reports.

Producing 1,400kg of beef liveweight per hectare means Sam Chesney is achieving more than double the national average for beef production per hectare in Northern Ireland.

Spend 10 minutes discussing his overall farm strategy and it's clear that part of the reason for his success is his willingness to try new things in order to drive farm profitability. Forage management is one area where he is particularly keen to embrace new concepts - whether that's paddock grazing, grazing turnips, taking fresh grass samples to track quality or experimenting with new grass and clover mixes.

It's this fresh approach, together with his commitment to adhering to the basics such as regular soil testing and reseeding with quality grasses, which has helped him achieve some marked improvements in overall performance since he first tackled forage

management in 2009.

Sam explains: "We have doubled our output - if not more - and halved our costs from where we were before. So we're producing twice as much liveweight per hectare as the Northern Irish average and feeding half as much meal per cow unit versus the average Northern Irish beef farm."

Situated in what Sam describes as the ideal "microclimate" for grass growth, Coolbrae Farm, on the Ards Peninsula, runs 140 Limousin spring calving cows and 30 bulling heifers. Cows are served to a Limousin, whilst heifers go to an Aberdeen Angus, with the Angus calves produced for a Tesco Finest contract. The aim is to

produce a finished animal as cost-effectively as possible using grazed grass and homegrown, quality silage, although bulls will be creep fed at grass to get them away.

Grass varieties

Around 25% of the 81ha (200 acre) farm is rented, so the focus has been on improving the 75% of land under their control. The majority of the grazing platform has been put down to an Aber High Sugar Grass mix including AberEve, AberGain, AberMagic and the white clover, AberDai. Sam believes this is favoured by the cows and helps him hit residuals

of under 1,500kgDM/ha.

All varieties are chosen from the Recommended Grass and Clover Lists to ensure quality. However, Sam believes this means nothing unless soils are not spot on. "If soil pH is not right, it doesn't really matter what varieties you grow. If you don't manage soils well, you won't grow grass," he says.

The benefits of reseeding are particularly marked when comparing performance on improved and non-improved, rented ground. For example, this year, one 10-year ley produced around 7.3t/ha following an application of 126kgN/ha. However, the neighbouring grass reseed produced 13.75tDM/ha.

This field in itself is an example of Sam's approach to trying new things. The grazing mix includes the long lasting red clover, AberClaret, along with perennial ryegrasses AberEve, AberMagic, AberGain and AberDai white clover. This was drilled in spring 2016 with spring wheat. A cut of silage was then taken in August that year and the field grazed in September. This year the ley has received 148kgN/ha and yielded nearly 14tDM/ha.

Grazing management

Using quality grass varieties has helped boost performance, but so too has Sam's approach to grazing. Rather than set stocking - which Sam believes is "past its sell by date" - a shift towards paddock grazing has improved grass quality and yields and enabled the farm to up stocking rates. Fields are also regularly

monitored using a grass plate meter to create a grazing wedge. Now the farm stocks at 4,450kg liveweight on the grazing platform, which has meant the farm has had to apply for a derogation to apply 250kgN/ha.

Sam adds: "I think we're the only beef farm in Northern Ireland that has applied for a derogation as we have been able to increase stocking rates so much."

Red clover

When it comes to achieving a cost-effective finish, red clover silage is playing an increasing role. Around 2ha (6 acres) of the five-year red clover AberClaret, plus a hybrid ryegrass, has been planted for silage. "This is in its fourth year and the performance is getting better," says Sam.

This year, first cut was taken on 14th April, with a fourth cut done around the end of August. Up until that point the ley had produced

around 32 bales/acre with only 50kg of potash applied at the start of the year. This 16-18% crude protein silage is used in the beef finishing TMR, with lambs from the farm's 100 Mule cross Texel flock also grazing the aftermaths.

Sam adds: "The red clover has helped us reduce the protein in the meal by 2-3%, which has brought a saving of about £8-12/tonne."

Turnips

Further savings have also been realised since introducing turnips for winter grazing. These were introduced for the first time in September last year as an entry into a grass reseed. A 5ha (12 acres) ley with good soil indices of 2+ and a pH of 6.2 was chosen. This was then burnt off and direct drilled with Samson turnips, with a 12m headland. Third cut bales were then put across the centre, although in hindsight, Sam says these were not

needed as there was plenty of turnips.

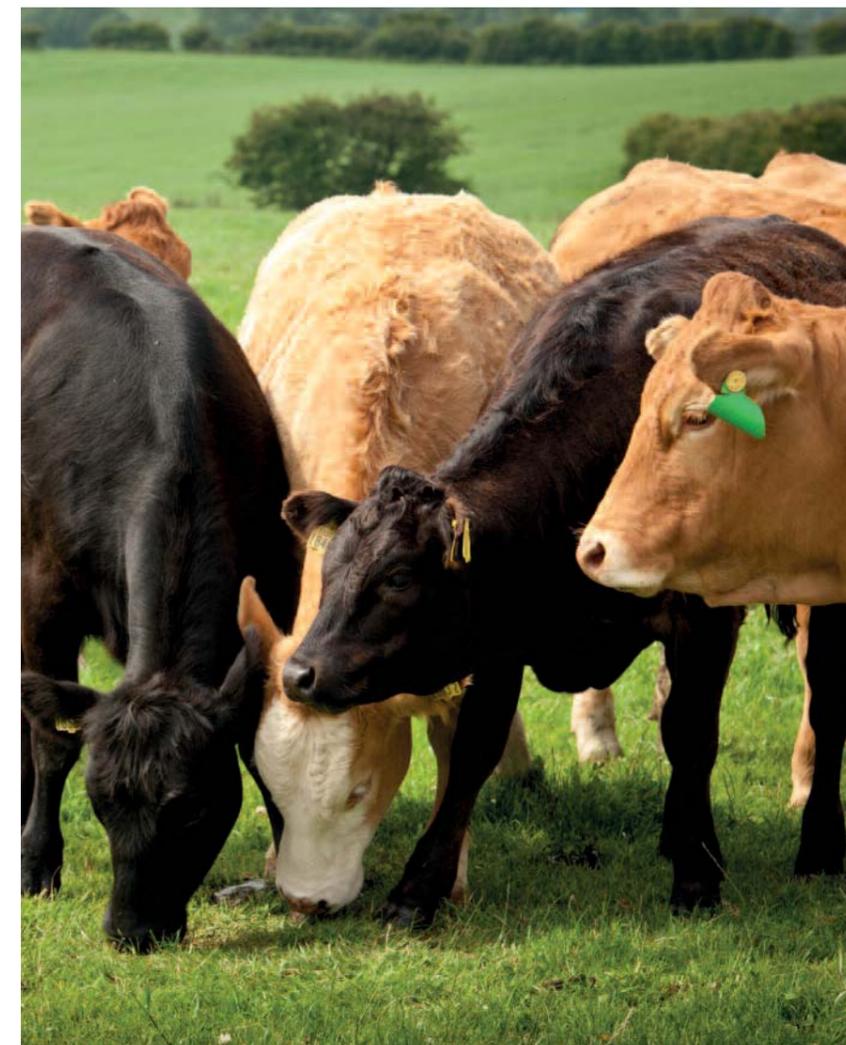
Ewes and lambs were strip grazed from one end and bulling heifers from the other from 7th January. However, Sam believes he should have grazed more stock on it to maximise utilisation. "We got 30t/ha fresh weight yield - it was a serious amount of stuff," he says.

Putting the turnips in cost around £600 versus about £5,400 for winter housing - excluding savings in labour. Sam believes the strategy not only saves money, but also acts as a good break prior to a reseed to help prevent leatherjackets. As a result, he will continue to grow turnips moving forward, as well as continue to try new strategies to drive performance into the future.

"We need to be very proactive and try anything to see if it works. If it doesn't, we won't do it again," he says. 

Feeding facts

- 8-10 week calving period from mid-March.
- Cows and calves rotationally strip grazed.
- Calves creep fed from end August and TMR introduced to fields in October to aid transition at weaning.
- Cows receive a high straw TMR including low potash second cut silage at housing.
- Bulls achieve 1.5kgLWG and heifers 1.3kgLWG up to weaning at grass.
- Calves get a TMR of first cut silage and red clover at housing and a 14-15% protein mix (depending on silage analysis) plus yeast and rumen buffer.
- Bulling heifers out-wintered on turnips from January.
- Bulls housed until finishing in July.
- Finishing TMR - red clover, grass silage, maize and buffer. Bulls receive meal, heifers do not.
- 12 steers for Tesco contract grazed on fields shut up in October to January.



Soil and forage strategy benefits organic dairy

Soils are the bedrock for success at the home of Yeo Valley in Somerset, as Aly Balsom finds out.

An ongoing soil improvement programme is largely to thank for the fact the Lakemead herd of British Friesians at Holt Farms, Somerset, is able to benefit from an extended grazing season.

At the same time, farmer Mary Mead believes overall farm performance has remained similar to that achieved prior to organic conversion in 2007, due in part to the focus on soils.

Farm manager, Jon Wilson says addressing the mineral balance of soils by using mechanical and chemical tools has resulted in a marked improvement in soil structure, particularly on the farm's heavier ground.

He explains: "We're getting out

earlier than we used to. We've done soil improvement work, which has made fantastic improvements to soils so they are as productive as they were pre-organic. We can keep cows out longer in the autumn and get cows out earlier in the spring. We now have cows out in March, rather than April."

Soil strategy

Having started working with soils consultant Josephine Scamell in 2005, soils analyses were carried out across the farm. Test results at Holt Farm highlighted high levels of magnesium in relation to calcium, which was making soils 'sticky' and preventing water from percolating. This in turn was causing water logging in the autumn/winter and severe cracking in a dry summer.

As a result, since 2006, gypsum (calcium sulphate) has been applied at up to 2t/acre on the worst fields to bring the calcium/magnesium ratio back into balance. Spring slit aeration and pan

busting has also been carried out.

Jon says: "Soils are now much more friable, self-structured and don't crack. It's brought a lot of earthworms back to the soils."

Holt Farms have two dairies; Holt Farm sits beside Blagdon Lake, whilst Yoxter Farm is located a few miles away on the top of the Mendips (see box). Total acreage is 486ha (1,200 acres), with about 202ha (500 acres) in a grass silage and arable rotation, adjacent to Yoxter. Prior to being purchased by the business, this land had not had livestock on it since before WW2, so raising organic matters and P and K indices - some of which were at 0 - has been a priority.

The introduction of slurry separation systems on both dairies has been part of a strategy to raise soil indices across the farm. The solids are now composted (see box) and used on the arable ground, whilst the liquid is applied behind cows, after grazing.



Jon Wilson and Mary Mead have adopted a soil improvement plan at Holt Farms which has helped extend the grazing season.

Forage leys

3-4 year red clover leys have also been incorporated into the arable rotation to boost soil fertility. This is a mix of red clover, Italian ryegrass and hybrid ryegrasses including the Aber High Sugar Grass AberEve. This is generally followed by one year of cereals and then 3-4 years of a perennial ryegrass, white clover mix. This includes tetraploid hybrid ryegrass and intermediate diploid and tetraploid perennial ryegrasses, including the Aber High Sugar Grass variety, AberStar and white clovers AberHerald and AberPearl.

Jon believes the Aber High Sugar Grass varieties suit the farm's location. "The Aber varieties are bred in Wales with a climate akin to what we get over here. We have had no problem with crown rust since we switched to Aber," he explains.

To further drive organic matters, some of the red or white clover cutting leys will go into a fourth "dynamic year". The leys are then used for grazing with ewes and lambs from the organic sheep flock, cut for hay or mulched with a flail toppler.

Weed control

Grazed grass leys are also in rotation with arable to help break the weed cycle. Grass will be ploughed and oats drilled in the spring to smother any weed growth. This will then be cultivated again in the autumn to further control weeds. Some fields may also be left fallow for a year and cultivated several times to control weeds.

On the grazing ground - where docks are a particular challenge - flail topping after grazing is the main weed control strategy. This also helps spread muck and encourages the grass to come back evenly. Separated liquid is then applied.

Jon adds: "The separated liquid is applied at 2,000 gallons an acre using a dribble bar to avoid leaf contamination. It infiltrates into the ground well and the gaps between the bands allow the soil to "breathe", which helps maintain worm activity."

Cows are rotationally, strip grazed on 12-hour breaks. Traditionally, grazing ground has been planted with intermediate diploid and tetraploid perennial ryegrasses, including Aber High Sugar Grass varieties, AberWolf, AberGreen, AberMagic, AberClyde and AberGain plus white clover.

In recent years, an increasing proportion of the grazing platform has been planted with a Cotswold Seeds herbal mix. This includes sanfoin, lucerne, Puna II chicory, plantain and three different white clovers. Mary believes the varying forage types help draw up different minerals from the soils, so the plan is to put the entire grazing platform on both farms down to this type of mix. Mary also believes the type of cow helps maximise production from forage.

She says: "British Friesians are traditional grazing animals and have been bred to be effective converters of forage. They are very easy to manage and the fertility is exceptional." 

Composting strategy

Composting FYM from loose housing and the solids element from the slurry separation process is one of the main strategies for controlling weeds on the organic system at Holt Farms.

- Muck is tipped in rows in fields.
- The heaps are then turned up to six times over an eight-week period using a windrowing machine which accelerates the composting process.
- Any compost accumulated in the spring and summer is applied to autumn sown crops at 15-20t/ha.
- The microbial activity and the heat generated in the composting process eliminates weed seeds, helping to control the proliferation of weeds.
- Grass that gets ahead of cows on the grazing platform may also be cut and composted.

Farm Facts

Holt Farm

- 48 inches rainfall and 200ft above sea level.
- 240 Pedigree British Friesians.
- 7,467 litres a cow per year with 3,052 litres from forage.
- 3.8% fat and 3.45% protein.
- 2,181kg concentrate a cow a year.
- Cows calve mainly in the autumn with a smaller spring calving group.

Yoxter Farm

- 70-80 inches rainfall and 850ft above sea level.
- 180 Pedigree British Friesians.
- 6,962 litres a cow per year with 1,546 litres from forage.
- 2,550kg concentrate a cow a year.
- Cows calve from September to December.

Beech Farm - Dairy youngstock and beef grazing.

Merecombe Farm - 600 Romney Shetland ewes.

Milking cows winter ration - grass silage, wholecrop, hay, crimped oats, organic maize, organic soya, organic molasses, plus flat rate feeding through parlour.



Festulolium brings beef benefits

Choosing the right beef breed and forage to suit farm type is proving the recipe for success for one Norfolk producer, whose customers think the same, as Laura Mushrush reports.

Beef produced on Glaven Farm is recognisable in the butcher shop meat cases in Holt in Norfolk – bright flecks of marbling spread evenly across a cherry red ribeye lined in yellowish fat, signature to an animal fattened on forage.

The breed behind the meat quality? A local herd of pedigree Long-Legged Dexters packing enough flavour to satisfy an increasingly growing local market base of loyal customers.

“Dexters are known for their meat quality, producing beautiful, high marbled meat. People always tell me, ‘it tastes like beef used to. It tastes like beef should,’” says Marcus

Sadler, the farming mastermind who has taken control of his bottom line by creating his own beef market.

But there’s a lot more to Glaven Farm than just beef, which just happens to be the lucrative by-product of Marcus’s calculated plan of matching the right forage varieties to the region’s tough environment and the right kind of cattle to make the most of both.

“Our soil is very light, sandy lowland which is vulnerable to drought,” he explains. “But we also have areas of the farm that are quite saturated and very wet marshland.”

While 49ha (120 acres) of the 567ha (1,400 acre) owned, tenanted and contracted farm is permanent pasture, the remaining acreage is on a seeded grass ley/arable/cover crop rotation to add organic matter into the light land, explains Marcus.

“We have a few different rotations on the farm to best suit varying soil types. For our lighter land, we put 34ha (85 acres) down to a drought tolerant forage on two year leys. This is followed by winter barley, which is followed by a cover crop over the winter, then spring barley and then back to a grass ley. The rotation helps us get decent arable crops off our light land.”

Matching the right forage

Historically, Marcus has chosen Timothy and Cocksfoot for his two year grass leys, taking silage cuts in May and July.

“We used to grow pure stands of it, having to double the seed rate of the Cocksfoot so it didn’t grow in lumpy patches. Providing we could cut it ahead of the heading date, it produced reasonable silage,” he says.

Two years ago, Marcus decided to sow part of his leys to a festulolium called AberNiche. This cross between a meadow fescue and Italian ryegrass harnesses the fescue’s drought tolerant traits and marries them with the ryegrasses’ yield production.

Marcus says: “AberNiche is designed to withstand drought conditions while still producing high quality forage – something we weren’t quite capturing with the Timothy and Cocksfoot leys. Its well developed root system also works well in our soil structure, by pulling up more from the ground.”

“When our first AberNiche cuts were taken in mid-May of 2016, we were yielding 10 round bales/acre, each averaging 600kg in weight. The second cut at the end of July was about half that. But to be fair, a lot of our yield on the second cut will be determined by rainfall – if we get rain it won’t be uncommon for second cut yields to match the first.”

The success with AberNiche has resulted in more grass leys being put down to the variety. Marcus believes silage quality has improved, which means cattle “demolish it” at feed-out. This autumn he also decided to extend the farm’s two year leys to three years and overseed the old AberNiche leys with 70 percent new.

It’s also been incorporated into the farm’s cover crop rotation. While the farm’s cover crop selection includes oil radish, sugar beet, red clover and white clover, Marcus direct drilled AberNiche into a small field of white clover this autumn for more diversity in the next silage cut.

“If we don’t try different things, we’ll miss out on potential improvements. Clover has proved to be a really nice addition to our cover crop system, so it will be interesting to see how the combination of white clover and AberNiche will do as a silage option,” he says.

Matching the right beef

While Dexter cattle may seem like an unconventional breed to primarily influence a 200 head herd, just like everything on Glaven Farm, they suit a purpose.

“Our permanent pasture has some very wet marsh land, and because they are so light footed, Dexters don’t punch into the ground like bigger breeds would,” explains Marcus. “Dexters can also be finished off grass and still produce quality meat – which opened up a local market as well.”

On top of managing the pedigree Dexter herd, Brown Swiss/Angus replacement heifers are brought in from a neighbouring dairy and put to a Dexter bull to ensure calving ease.

“We call their offspring ‘Dangus,’” he says.

“We try to calve down at two years of age and a calving ease mating helps eliminate stress caused by calving difficulties.”

The second breeding season, the Brown Swiss/Angus will be bred to a pedigree Angus bull and Dangus replacements will breed to a Dexter bull. Since the farm markets year-round

to local butcher shops, cattle are split into small batches for managed year-round calving.

“Because our Dexter herd is completely forage based, they are on grass the longest – 26 to 29 months of age when they go to the butcher,” says Marcus. “The Dangus take 20 to 23 months, and will receive a bit of homegrown rolled barley in the last six weeks. And the Brown Swiss/Angus take the least amount of time, finishing at 18 to 22 months. However, they are pushed the last six weeks with barley.”

A system that works

What it comes down to for Marcus is finding the right management system that fits his farm’s environment. And while he is still in the process of challenging his old methods of production for an improved future, he is on the right track.

“Once we found the right forage and genetics for our land, everything has snowballed from there. We’re in more control of our end market and able to utilise all the land available to the farm. Not only that, but we’re improving our soil structure and getting good silage,” he says. **F**



All in the chop

Straw has the potential to fulfill several important roles in dairy and beef cattle nutrition. Luke James spoke to a nutritionist about maximising its potential and a beef farmer who has significantly increased feeding rate to good effect.

Used tactically, and with specific goals in mind, straw can be a valuable inclusion in dairy or beef rations, according to Hefin Richards of Rumenation Nutrition Consultancy.

The two main roles are to provide structural fibre and – in non-production animals such as dry cows – to reduce the energy density of the ration. In either case, straw can only fulfil its function if it is readily consumed without sorting, which means the quality and presentation must be right.

Mr Richards says if farmers are planning on incorporating straw into a ration it's important to start with a product that is decent quality and free from mould and soil for example.

He explains: "It should also be chopped, whatever the intended role, as this will ensure it is not

sorted from the more desirable parts of the ration and left to be mopped up by the shy feeders in the group. I would recommend aiming for a chop length of no more than 50mm (2 inches) as anything longer than that will certainly have the potential to be sorted."

Wheat straw tends to be more brittle and easier to chop, so is generally preferable to barley straw as a ration ingredient, according to Hefin.

"It's important that straw is chopped adequately, and barley straw is typically more soft and pliable and therefore harder to process," he says. "If chopping straw in a diet feeder, make sure all the blades are in place and sharp – and allow sufficient time. In some cases, it might be necessary to pre-

chop the straw before other feedstuffs are added, or even chop the straw in another machine before loading it, if necessary."

Straw as structural fibre

Chopped straw provides a concentrated source of structural fibre, creating a mat in the rumen that stimulates rumination. The amount of structural fibre required from straw depends on what else is in the ration.

"Inclusion rate in a milking cow ration could range from as little as 0.3kg/head/day up to as much as 1.5kg/head/day in a low structural fibre diet such as one high in maize silage, for example," says Mr Richards. "In an intensive beef ration containing no other forage, chopped straw would typically make up about 10% of the dry matter, or around 1.2kg/head/day.

Straw to reduce energy density

Straw as a feed offers consistent nutritional value, being high in fibre and typically around 5MJ/kg ME and 4–5% crude protein. According to Hefin, it is generally a better option than lower quality silage as a way of feeding a low energy diet.

"I usually advise farmers to make the highest quality grass silage that they can, and avoid using mature grass to make silage for dry cows, for example," he says. "Straw is a far better option for youngstock and dry cows, being consistent in quality and offering the option of adding fibre as required, but again should be chopped to ensure it plays the intended role in the ration."



If adequately chopped, straw can be fed with grass silage without the risk of sorting.

CASE STUDY Making full use of straw

Investing in a diet feeder with the capability of chopping and incorporating significant quantities of straw into suckler cow rations is described by Matt Cleland as the most notable change made on his family's beef unit in the last five years.

The 340 cow unit, based at Glebe Farm near Holme Lacy, Herefordshire, had traditionally maintained its spring calving suckler herd on grass silage, feeding what Matt describes as 'scary' levels of forage.

"Even though the aim with suckler cows is generally to restrict feeding – the opposite to dairy cows – we used to get through an enormous amount of clamped and round bale silage," he recalls.

The decision to introduce straw was subsequently an easy one, particularly considering the business runs around 182ha (450 acres) of arable alongside the sucklers and therefore has easy access to straw.



Matt Cleland says replacing some of the grass silage with wheat straw has cut the cost of feeding the farm's suckler cows significantly.

Matt adds: "We now include 4.5kg/head/day with the grass silage in the suckler cow's winter ration. Overall, by looking at the grass acres required per cow, we've probably reduced the cost of keeping cows by half. We are also maintaining the cows in more of an optimum condition and have seen fewer calving problems as a result."

Effective incorporation of straw with grass silage is essential, which is where the Kuhn Euromix 2280 diet feeder plays its part. Bought five years ago, this twin vertical auger machine with a 22 cubic metre capacity hopper will take large square straw bales (125cm x 90cm) and chop and mix these with round bale silage efficiently and effectively.

"We use wheat straw for feeding and aim to chop it down to around three inches," says Matt. "It takes about 20 minutes to mix a load that will feed 180–200 cows. There's usually enough time to do the

Continued on page 22

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bedding down whilst a load is mixing, so the whole operation is pretty efficient."

With all cattle taken through to finish or reared as replacements for what is a closed herd, the Euromix is kept busy at Glebe Farm for three to four hours a day during the busiest periods. Finishing bulls, steers and heifers are all reared indoors on rations comprising of homegrown rolled wheat and barley, homegrown beans, fodder beet, distiller's grains and bought-in protein blend. In the past year the unit has finished over 100 bulls at an average 410kg carcass weight, although the aim is to finish bulls lighter to meet current market specifications. Heifers typically reach 330-360kg DCW in 16-17 months.



Big bale straw is added to the suckler cow ration at a rate of around 4.5kg/head/day.

Fibre chopping efficiency

Maintaining the diet feeder is a must-do job, according to Matt Cleland, who says the most important aspect is to change the knives in good time.

"We have changed the knives every other season since we've had the Euromix," he says. "If for any reason we are late doing this, we'll soon be reminded by the extra time it's taking to chop and mix the rations. It's not a cheap exercise, but it's money well spent when you look at the extra time and diesel it takes when the knives are worn."

Kuhn has designed the Euromix with long fibre chopping as a priority, including a number of features in the design of augers and hopper that enhance chopping and mixing efficiency. **i**



The polygonal shape of the hopper acts as a brake, holding the material for longer to increase the rate of chopping. Details such as the pitch of the auger coils and positions of knives on the auger all contribute to more efficient processing of long fibre.

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Sense check your silage

Open silage clamps should be used as an invaluable source of information, which can help improve silage-making next year, says Volac's Derek Nelson.

Silage quality and quantity can have a major impact on the financial health of dairy farms for six months or more, so it is worth reviewing open clamps now to learn lessons for next year.

It's only when you get stuck into seeing what's inside the clamp, and feeding it, that you get a full picture of what you've produced and how good it is.

Commit to noting down the good and bad points of the silage now, so you can make any necessary improvement next season. Better still, take photos as well.

Five-point checklist of the open grass silage clamp:

1. How does the clamp look?

To begin, make an honest appraisal of whether the clamp is tidy, or whether the face is non-uniform, and allowing air to get in. Correcting an untidy face can make a substantial difference to reducing air ingress and surface wastage. Deeper waste can be due to a poor fermentation, so management may need improving – such as clamp

consolidation, additive use, and clamp sealing. Inadequate consolidation is a big problem nowadays, with trailers arriving at the clamp too soon before the

wrong type of fermentation caused by undesirable microbes. As with aerobic spoilage, this means some of its feed value could already be lost. You may have done all the

other ensiling steps well, but if the fermentation hasn't been dominated by good bacteria, your other good efforts could be undermined.

4. Feel – how does it feel?

If it's gone slimy, this can also be due to excess nitrogen at harvest and to low sugars and a poor fermentation allowing undesirable microbes

to take hold. These start to break down what's in the clamp. Check also whether the silage is leafier or more fibrous than you were expecting. Fibrous silage suggests it was cut too late – for example if cutting was delayed in pursuit of extra bulk. Optimum cutting time for both yield and quality is just before heading. After heading, the digestibility of grass falls by about 0.5% a day.

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2. Temperature – how cool is it?

If it's warm, that's a sign of aerobic spoilage, caused by yeasts and moulds in the presence of air. These effectively burn up the silage's nutrients. Again, consolidation and clamp sealing may need improving. Unfortunately, problems with heating in the clamp won't go away when exposed to more air at feed-out – so you may need to consider an additive at feed-out designed to reduce heating in the feed trough.

3 Smell – what does it smell like?

If unpleasant, it could be signs of a poor fermentation or the

5. Moisture – how wet or dry is it?

If it's wetter or drier than expected, wilting technique may need re-checking. Wilting rapidly to 28-32% dry matter is the optimum for both minimising in-field losses and minimising effluent risk in the clamp. If the silage is wetter than the grass put into the clamp, this can be a sign of a slow, inefficient fermentation, since a by-product of slow fermentation is water. Using a proven additive will reduce this risk. **i**



Silage quality and quantity in the clamp can have a major impact on the financial health of dairy farms for six months or more, says Derek Nelson of Volac.

Reseeding pasture increases lamb gains

The benefits of reseeding are clear to see on one Cornish sheep farm where reseeded grassland has been shown to support lamb weaning weights comparable to creep-fed lambs, as Laura Mushrush reports.

Lambs reared on two separate swards reseeded with different varieties gained an average 144g/day more up to weaning than lambs reared on permanent pasture, show results from a recent pasture performance study.

The farm trial compared lamb growth across three different pasture types. While none of the ewes or lambs involved in the trial received any feed supplements, both reseeded swards supported lamb weaning weights comparable to AHDB's benchmarking data for high performing creep-fed lambs.

The trial conducted by Germinal and AHDB took place on Trefranck Farm near Launceston, Cornwall, owned by Matt and Pip Smith. Three pastures were each split into 7ha (17 acre) swards, with one being kept as permanent pasture and two being reseeded last autumn. Germinal's Aber HSG 3 mixture of long-term diploid perennial ryegrasses with white clover was used at a rate of 15kg/acre for one sward. The same long-term diploid and white clover varieties were reseeded to the multi-species sward, but with 3kg of the ryegrass replaced with 1kg each of perennial chicory, plantain and red clover. The flock was sorted at random with 138 ewes and an average of 220 lambs turned out on April 24 to follow a rotational grazing scheme. Post weaning, 250 ram lambs were rotationally grazed on each sward, with those reaching weight going to the abattoir on July 17th and the remainder following on August 14th.

Trail results for each pasture

1. Permanent pasture:

Lambs grew 200g/day, which is 50g less than AHDB's recommended daily liveweight gain. According to Matt, ewes and lambs were making significant slips in body condition, prompting him to give the flock an additional 6ha (15 acres) of pasture eight weeks into the study to ensure ewes met tupping weight.

"The decision to break the trial and increase forage availability was made because the physical welfare of the flock was being compromised due to the permanent pasture not being able to support the same intense stocking rate as the other two leys," says Matt. "The stress caused by less access to quality forage caused other issues in the flock on this pasture. Historically, we have never had an orf problem on this farm, but we had an increase in incidences on the permanent pasture, along with higher rates of foot problems and worm burden."



2. Aber HSG 3 + white clover:

Lambs grew 325g/day for an average weaning weight of 26.76kg.

3. Aber HSG 3 + white clover, red clover, perennial chicory and plantain:

Lambs grew 364g/day for an average weaning weight of 29.51kg.

Matt says: "The multi-species ley was by far the best in performance. Sheep rear-ends were much cleaner on this ley and lambs not only had the highest weaning weights, but were much stronger and alert than the lambs on the permanent pasture." 

Matt Smith of Trefranck Farm saw lambs grazed on reseeded swards gain an average of 144g/day more up to weaning than lambs grazed on permanent pasture.

Aber HSG 3

Kg	Variety
3.0	AberAvon HSG late diploid PRG
2.0	AberMagic HSG intermediate diploid PRG
3.0	AberGreen HSG intermediate diploid PRG
3.0	AberChoice HSG late diploid PRG
3.0	AberWolf HSG intermediate diploid PRG
1.0	AberPasture white clover blend

Aber HSG 3 with multi-species formulation

Kg	Variety
2.0	AberAvon HSG late diploid PRG
2.0	AberMagic HSG intermediate diploid PRG
3.0	AberGreen HSG intermediate diploid PRG
2.0	AberChoice HSG late diploid PRG
2.0	AberWolf HSG intermediate diploid PRG
1.0	AberPasture white clover blend
1.0	AberClaret long lasting red clover
1.0	Tonic plantain
1.0	Puna II perennial chicory

Reseeding method (September 2016)

- Soil analyses carried out.
- Old ley sprayed off.
- Cultivations (disc and power harrow).
- NPK fertiliser with sulphur applied to seedbed, plus calcified seaweed.
- Sowing with power harrow / drill combination at 15kg/acre.

Liveweight gain comparisons between reseeded and permanent pasture	Non-reseeded pasture	Aber HSG 3 + white clover	Aber HSG 3 + white clover, red clover, perennial chicory and plantain
Number of ewes	138	138	138
Number of lambs	218	223	221
Average weaning weight (kg)	n/a	26.76	29.51
Daily liveweight gain (g/day)	200*	325	364

*Estimated weight gain at six weeks before acreage extended. Source: Germinal / AHDB, July 2017

Reseeding drives productivity

Matt and Pip Smith of Trefranck Farm were named Farmers Weekly 2017 Sheep Farmer of the Year for their intensification practices. In the last four years, the couple have increased farm productivity by 200%, transitioning the farms suckler herd and mixed flock of 350 ewes to more than 1,000 New Zealand Romney and NZ Romney x Lleyn ewes and 400 Romanian red deer. In order for the farm to support this

intensive grazing system, significant investments have been made in fencing for cell grazing and reseeding 15% of grass leys a year.

"Through reseeding we are able to increase our stocking rates and achieve higher levels of output without the need for bought-in feeds," says Matt. "Great productivity per acre is our main driver and the key to a more profitable business."



Eight weeks into the trial, the flock on permanent pasture had to be given more access to forage due to performance being so poor it was compromising flock welfare, while the multispecies ley gave performance comparable to creep-fed lambs.

Innovation in forage crops

Laura Mushrush reviews some of the more recent additions to UK livestock farmers' forage crops menu.

Despite widespread industry acceptance of the need to make more from forage, a large majority of respondents to Forager magazine's 2017 Forage Use Survey are yet to venture too far from the main staples of grass, maize and wholecrop.

This is surprising, given the array of relatively new options now becoming available and – in some

cases – tried and tested.

With that in mind, Germinal's National Agricultural Sales Manager Ben Wixey runs through his top six forage innovations from the past few years, with the aim of stimulating interest in a more innovative approach to forage.



Hybrid brassica

Example variety: Redstart

Redstart, a hybrid brassica (rape x kale) is a high energy protein crop that takes quick growing genes from rape and combines it with the hardiness of kale for a hardy out-wintering grazing option for cattle and sheep.

Things to know:

- Yields up to 6-8tDM/ha.
- High energy and good protein source for cattle and sheep.
- Suited for summer, autumn and winter grazing.
- Ideal for out-wintering strip grazing systems and where fast growth is required.



Plantain

Example variety: Tonic

Tonic plantain is a high protein, broad leaved perennial forage herb that is an ideal companion in mixed species swards with red and white clovers and quality perennial ryegrasses, proven to boost liveweight gain in livestock. It is a coarse rooted plant that is well adapted to a range of soil types, suiting rotational grazing systems.

Things to know:

- Expected yield of 8tDM/ha.
- High protein content.
- Highly responsive to nitrogen.
- Moderate drought tolerance to provide livestock feed during dry periods.
- High mineral content, especially copper and selenium.
- Increases milk and meat production.
- Highly palatable.



Swede

Example variety: Triumph

Ranking at the top of the list for yield in New Zealand breeding programmes, the medium-dry bulb and good winter leaf retention of this swede makes it well suited for winter grazing of sheep and cattle.

Things to know:

- Expected yield of 10-12tDM/ha - 21% total DM yield advantage over market-leading variety.
- Yellow-fleshed mid-maturity with good leaf holding.
- High disease tolerance and good resistance to club root.
- High tolerance to dry rot and mildew.
- Graded and natural seed available.



Rhizomatous white clover

Variety: AberLasting

AberLasting is a hybrid white clover, bred at IBERS Aberystwyth University for improved drought tolerance and persistence. Breeders have crossed the rhizomatous Caucasian clover with a conventional small leaf white clover to create a hybrid with stolons and rhizomes. Typically, it is grown with a companion grass such as ryegrass and supports continuous grazing of sheep on long term leys.

Things to know:

- Estimated nitrogen fixation of 150-250 kgN/ha.
- Given equal access, livestock may consume 20-30% more white clover than grass.
- Rhizomatous root characteristics improve drought tolerance.
- High D-value, crude protein and DM intake give it excellent feed value.
- Rooting system improves soil structure by decreasing density to help with fertiliser recovery and nutrient movement.



Multi-species leys

Species types: Grasses, clovers, herbs

Combining different plants with complementary characteristics in a sward can lead to more effective use of soil nutrients, giving an overall advantage compared to monoculture swards.

Things to know:

- Pick varieties off the Recommended List.
- Allows for better soil nutrient utilisation due to roots hitting different parts of the soil profile.
- Multiple sources of protein, energy and minerals.
- Increased animal performance when including nitrogen fixing species such as clovers alongside ryegrasses.
- Will take time to know which species will be most successful in individual fields.



Long-lasting red clovers

Current varieties: AberClaret and AberChianti

Two to three-year red clover crops do not fit well with many livestock farming rotations so the development of long-lasting red clovers at IBERS Aberystwyth University is a significant breakthrough. The current varieties on the RGCL have maintained high levels of dry matter into their fourth and fifth years in official trials. AberClaret (14.6tDM/ha in year four) and AberChianti (13tDM/ha in year four) are both fulfilling their potential in commercial mixtures.

Things to know:

- Dry matter yields of 12-15tDM/ha.
- 18-22% crude protein.
- Ability to withstand trampling makes it adequate for grazing dairy cattle.
- Can be grown in grass/clover sward or as monoculture.
- Valuable break crop with deep taproots to help improve soil structure. 

FORAGE BITES

Digestible knowledge on all things forage

Quality forage stocks offer huge potential

Many farmers have the opportunity to increase production from forage this winter thanks to generally high quality grass and wholecrop silage. However, ration balance will be essential.

Results from 3,500 first cuts and about 1,200 second cuts analysed by Trouw Nutrition GB show that both first and second cuts are generally analysing well on average, thanks in part to many farmers cutting earlier in the season. There is also less of a gap between first and second cut analysis results.

Trouw Ruminant Technical Development Manager, Dr Liz Homer comments: "Provided diets are carefully formulated to balance silages and to maintain good rumen health, there is a tremendous opportunity to increase milk from forage and improve margins."

On average, first cuts have higher dry matter, crude protein and energy versus 2016. Neutral detergent fibre (NDF) levels are also lower which reflects earlier first cut crops, whilst pH is slightly elevated. Second cuts show a similar picture.

When looking in more detail at the carbohydrate and protein make up of silage, the ration balance story is the opposite of last year. 2017 silages are generally low in fermentable protein and high fermentable carbohydrate, which means farmers will need to consider the following:

- Balance diets with fermentable protein sources, such as soya, rape and possibly urea (creates an opportunity to save on higher cost bypass protein).
- Feed more bypass starch, such as maize which could replace some wheat.
- Clamp face management will be important once crops are open to prevent heating due to elevated pH.
- Consider acidosis risk when feeding first cuts due to high sugar, low NDF and high fermentable carbohydrates.

Average silage results to September (Trouw Nutrition GB)

	First cut grass	Second cut grass
Dry matter (%)	33.2	33.5
Crude Protein (%)	14.8	15.0
ME (MJ/kgDM)	10.9	10.5
NDF (%)	46.6	48.5
pH	4.3	4.4
Acid Load	47	44
Fibre Index	188	196

Producing dairy bred beef on forage alone

A trial is underway at Shropshire's Harper Adams University, aiming to bring on and finish dairy bred steers solely outside using forage, in partnership with AHDB and ADAS. The trial group is a mix of Holstein Friesians and Holstein Friesian crossed with Herefords. Having been grazed on grass over the summer, they have recently been moved onto their winter grazing, 6ha (14 acres) of fodder beet.

Aiming for a daily liveweight gain of 1.2kg before the young steers reach 200kg and 1kg daily liveweight gain from 200kg afterwards, they are being out-wintered on Geronimo fodder beet, supplied by Field Options. Geronimo is suited to both grazing and lifting. Both high-yielding and high quality, it has an intermediate dry matter percentage ideal for overwintering cattle on.

The carefully orchestrated transition from grass onto the fodder beet is an important part of the trial. Kept behind an electric fence, the steers are being gradually introduced onto the fodder beet - whilst still having

access to plenty of grass - to prevent bloat and digestive problems. The steers will be moved back onto grass in the spring and will ideally be slaughtered between 18 months and two years old, with the cost-saving aspects of outwintering also being assessed as part of the trial.



Squeezing more from fibre

A feed supplement that can help ruminants obtain more nutritional value from the fibre fraction of homegrown forages has been launched by Azelis Animal Nutrition.

Available as a combination of dried yeast and enzymatic fermentation extracts, new Fibrase is said to improve feed efficiency by helping ruminants to break down more of the neutral detergent fibre (NDF) content of grass, maize and wholecrop silages.

Phil Vernon, ruminant technical sales manager with Azelis, says that early farm trial work had been encouraging, with a number of dairy and beef farmers reporting milk and meat gains from the forage being fed, as well as much finer fibre washings when sieving dung samples.

"The conversion of feeds, particularly fibrous forages, to milk and meat, is not particularly efficient. Only 10-35% of the energy intake is captured as net energy by the ruminant animal because 20-70% of fibre components, such as cellulose, may not be digested."

Fibrase can be hand tipped into TMR feeds, top dressed or incorporated into rations manufactured at the feed mill. Recommended feed rate for beef cattle is 10g/head/day. 



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CHEWING THE CUD

with Karen Brewer

Karen ruminates with Phil Stocker, chief executive of the National Sheep Association, on the rationale for more grass leys in crop rotations and the advantages of reintroducing sheep to the arable farm to tackle both declining soil fertility and the increase in persistent weeds.

KGB: Welcome to Forager Phil, although it does seem a little odd to be talking to a sheep man about management challenges facing arable producers on the eastern side of the country. I guess your organic background gives you an insight into soil management issues on all types of farms?

PS: Pleased to be under the 'Chewing the Cud' spotlight Karen. Yes, my previous role as an organic advisor took me on both livestock and arable units. The issues of declining soil quality, falling organic matter and resulting decrease in natural soil fertility are not new, but the situation has steadily worsened in many arable areas, not only in the east but anywhere in the country, especially on heavy land.

KGB: Are we talking about compaction as the main problem here?

PS: Reduction in biological activity and declining soil organic matter are the key issues. The two go hand-in-hand, with significant knock-on effects on management, yield and economic return on nutrient inputs. It is more difficult to make a good seed bed on these depleted soils, they are more prone to compaction and have a reduced ability to hold moisture, suffering both increased run-off and higher levels of leaching. Soils with high organic matter content and more biological life hold moisture and make nutrients more available to plants, improving the return on investment in fertilisers. They are also less prone to drought stress when it is dry or waterlogging when it is wet.

KGB: Do you see greater inclusion of one and two-year grass leys in arable rotations as the solution to these issues?

PS: Adding grass to any rotation will have a positive impact on soil organic matter, build fertility and increase yield in the following arable crop. The length of the ley is dependent on the system and the extent of the problem. Grass breeding has moved on with a highly adaptable range of very good Italian, perennial and hybrid ryegrasses available. But whether you opt for a short one or two-year Italian/red clover break or a longer three to five-year perennial/white clover ley, it is critical to make money out of that break crop. The key questions to ask when deciding which grass mix to sow, are: what am I trying to achieve, and what am I going to do with the resulting crop?

KGB: Presumably it is the economic limitations of grass versus cereals that has seen it dropped from many arable rotations. Are there sufficient practical and economic benefits for its return?

PS: The positives of adding grass to existing rotations are clear-cut, with even a one-year ley providing a significant yield boost to the following arable crop due to improved soil fertility and fixed nitrogen. An Italian/red clover mix will produce significant crop bulk that can be topped and mulched, so there are no livestock to manage, although the downside is there is no income for that year from those hectares.

KGB: Are the longer term benefits sufficient for growers to justify swallowing an income free year on a portion of their land?

PS: A one-year ley can work, fixing 200kg N/ha, increasing profit margin in a following wheat crop where farmers should be looking for the same yield, but without fertiliser inputs. Growers can also expect some benefit in the second crop after grass too. The addition of grazing livestock can significantly improve the economics, their manure adding a lot of K directly back to the land and feeding soil microbes, increasing bioactivity that will mobilise P availability to following crops. Add the direct financial income from livestock sales or grazer rents and the idea of two and three-year leys becomes much more attractive. It is these longer leys that will bring the most significant improvements in soil structure and organic matter, the best prospects for control of persistent weeds and the greatest yield benefits in following crops.

KGB: Many arable farmers will lack the management skills and few farms will have the necessary infrastructure. Again, are the benefits sufficient to justify the investment?

PS: Infrastructure, skill and interest are the big barriers to reintroduction of livestock in arable areas, but this is where sheep come in. Capital costs and infrastructure requirements are much lower than for cattle, with minimal housing, handling and manure storage and movement needs. Containment using low-cost electric fencing can be very successful and there are increasing opportunities for working relationships where growers do not have to buy the livestock, leaving water provision as the main investment. We are seeing specialist flock masters setting up arrangements with arable farmers so they bring in the necessary skills.

Where do you see opportunities for sheep farmers?

There are business opportunities on two levels. Firstly, we are seeing good numbers of new entrants taking advantage, with young people setting up enterprises. There are also examples of established businesses seeing the opportunity to scale-up, making their operations more viable. It's not only about access to land but also the benefits of parasite-free grazing and high value legume-rich leys.

What are the key elements to success where livestock farmers are collaborating on arable farms?

A good relationship is critical, so there is mutual trust and constructive communication. It's important to have a simple and clear agreement, so both parties fully understand their responsibilities.

KGB: I can see growers being attracted to the idea of all the livestock management headaches being someone else's responsibility, while they collect the annual basic payment, but where and when are these grass breaks best fitted into the rotation?

PS: A typical rotation has crops following grass in order of declining nutritional demands: two wheats, one barley, one oats and then back to grass. Where only short Italian leys are grown, one year of grass every four years can work or two years in every five or six years of arable. But definitely, growers should be looking for two wheats after every grass crop to make the most of the yield boost the break crop provides. Although the traditional route is from oats to grass, with rape now a major part of the rotation, its earlier harvest provides a wider window to get the grass in, from late August to early September. The challenge is a potentially high slug population due to the amount of trash. As a result, pellets may need to be applied to protect the new ley. Another way in is to undersow a preceding barley crop and this adds flexibility as the barley can be harvested first, with grass to come after, or they can be taken together as wholecrop silage. Putting in grass after wheat is possible, but higher risk due to the later harvest leaving you at the vagaries of the weather. 

One-year grass and clover leys can fix 200kg N/ha in an arable rotation

Adding grass to an arable rotation will benefit soil organic matter and increase yield in the following arable crop says Phil Stocker, chief executive of the National Sheep Association.

