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CROP PRODUCTION MAGAZINE

February 2026

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“Farmers are essential partners in shaping real-world solutions”

POINT OF VIEW

The crop sector is at a turning point due to a number of different pressures such as climate variability, rising input costs and market volatility. In the agri-tech sphere however, we’re seeing growth – assisted by both world-leading research and the implementation of the new Industrial Strategy, which is supportive of agri-tech as a frontier sector within the advanced manufacturing pillar.

At the UK Agri-Tech Centre, we believe there’s a huge opportunity to turn agri-tech capability into productivity and resilience for farmers. A key part of that is about strengthening how we get innovation from the R&D environment into the field.

What start-up businesses in this area require – and what we’re providing at the UK Agri-Tech Centre – is a clear view of the opportunities in the arable domain, and an understanding of where SMEs might innovate to solve real-world problems.

Most SMEs don’t fail because their idea is fundamentally wrong. They typically fail because they lack the full ecosystem required to commercialise, whether that’s linked to testbeds, data, expertise or the connectivity across the network. For example, a developer might have groundbreaking imaging tech, but no access to controlled trials or multiple data streams to validate it.

Farmers are therefore essential partners in shaping real-world solutions, and we understand that technologies don’t succeed without that early engagement. Crucially, it’s that insight which allows the developer to prototype to a particular specification.

The fact you can test and trial if a product is genuinely useful, rugged enough to withstand a harsh environment, or is at a price point the end user is willing to pay for, is key for SMEs. It’s also a central theme of our recent Farming Smarter YouTube docuseries (visit the UK Agri-Tech Centre’s YouTube channel). This focuses on Somerset farmers Rob Addicott and Jeremy Padfield, and shows how agri-tech is making a tangible difference to on-farm efficiency.

We have a farming community and a market that are hungry for practical and profitable solutions. For example, we know farmers are looking for alternatives to synthetic fertilisers, or different ways to detect disease earlier, while the supply chain is looking for ways to reduce scope three emissions and improve crop quality and traceability.

There are several ways in which agri-tech can provide some of the answers to those challenges and ensure that agri-tech actually works for the people who rely on it. If we can connect more intentionally within the UK and across international partners, we can build the ecosystem those ventures require to scale more rapidly.

The value chain – farmers and growers – is arguably a missing link that’s too often overlooked. How we bring them in earlier and allow them to help shape how technology will be used on-farm is key, both for SMEs and the end user.

By Dr Harry Langford, Innovation Director, UK Agri-Tech Centre

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Catherine Whaley explains the benefits of a new molluscicide P.30

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CPM
CROP PRODUCTION MAGAZINE

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As spring approaches and crops wake up, CPM *aims to gather the best industry expertise to assist with your decision-making.*

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About Crop Production Magazine

Crop Production Magazine is the leading specialist journal for UK arable farmers and agronomists.

The magazine operates within a controlled circulation with a readership including farm managers, agronomists, machinery dealers and other arable supply industry professionals.

CPM is also distributed to agricultural universities, colleges and research institutes, examined by some of the leading researchers in their field as well as the next generation of crop specialists.

Above all, the magazine is read by UK farm business owners – decision makers. Articles are mostly in-depth and analytical, exploring the issues behind a current problem while aiming to present new ways of thinking.

The magazine doesn't seek to prescribe solutions, rather inspire, stimulate and inform.

CPM is proud to represent some of the most experienced agronomic, technical and machinery journalists, many of whom have received British Guild of Agricultural Journalist awards for their contributions.

The team works closely with companies that support *CPM* to gather inside knowledge on the technical issues that affect farmers and the wider food chain. Although small, *CPM* is managed by a driven team, responsible for delivering the sharpest insight and most relevant information across both print and digital formats.

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COVER STORY

"Chasing infection out of a crop is much harder and more costly than keeping a crop clean."

JOHN MILES

What does the yellow rust population change mean for T0s?

Historically, it's been perceived that T0 offers the smallest yield contribution of all the fungicide timings, but could new rust strains and lush crops change the balance this season? *CPM* opens up the discussion.

By Rob Jones and Janine Adamson

In recent seasons, challenging weather in March and April combined with a general trend of growing varieties more resistant to yellow rust and septoria, has shifted fungicide spend away from T0 in favour of T1 and T2.

But could this be about to change? According to analysis compiled by Agrii, the breakdown of the *Yr15* yellow rust resistance gene and its prevalence in AHDB Recommended List varieties means that almost half of the current UK wheat area is planted with a variety scored 4 or less for yellow rust.

John Miles, seed technical manager at Agrii, highlights that the breakdown of varieties to yellow rust wasn't necessarily apparent on farm last year, primarily because conditions weren't ideal for the disease. However, the risk remains real.

"It's been a few years since we've seen a severe yellow rust threat, which happens when we have significant yellow rust pressure across a large wheat area," he continues.

"Going back in time, some people might remember Slejpner breaking down to yellow rust in the 1980s; more will recall a similar event with Robigus and Solstice in the 1990s.

"The issue was that they were widely grown varieties – when Robigus broke down, it was grown in one in every three wheat fields across the country. This *Yr15* breakdown is as significant as any of those previous occasions."

Some of the most widely grown varieties this year such as LG Beowulf, KWS Dawsum, KWS Scope, and Champion (DSV), are rated 4 or lower, according to Agrii's variety ratings trial work, he adds. This equates ▶

Historical learnings

Agrii's John Miles highlights that when Robigus broke down, it was grown in one in every three wheat fields across the country.

to 40% of the UK wheat area.

"It's 10 years since we had Torch, Kinetic and Reflection breakdown to yellow rust. There are a lot of people who'll have entered the industry since who haven't experienced managing large acreages of rust-susceptible varieties.

"What we learned back then was that the cheapest way to manage yellow rust is to stay in front of it; chasing infection out of a crop is much harder and more costly than keeping a crop clean. Couple that with chemistry loss, such as epoxiconazole, and our tools are more limited than before.

"Subsequently, much hinges on the cold winter weather and how early spring comes. Yellow rust loves mild, bright days with a decent dew to provide leaf moisture," highlights John.

However, it's not just rust that farmers have to be conscious of. Earlier plantings and mild autumn conditions have led to thick, lush crops – while this is great for building yield potential, it also provides septoria an ideal environment to spread through the base of plants.

Where crops have been sown before the second week of October, RL resistance ratings will be affected, raises Jodie Littleford, Agrii's technical manager for combinable crop trials.

In fact, AHDB-funded research led by ADAS indicates that a variety's

T0 benefits

In trials, whether it was a septoria or yellow rust season, there's been a benefit in disease control and yield from adding a T0, highlights Agrii's Jodie Littleford.

A perspective on T0

Heading into spring, agronomist Ben Allard says crops look full of potential following favourable autumn growing conditions

Agronomist at Pearce Seeds, Ben Allard, says crops in his area were drilled slightly ahead of usual in autumn, as well as wheat tending to be planted earlier than the national average anyway.

Working with growers across Dorset, Wiltshire, Gloucestershire and parts of Hampshire, he adds that despite this, weed control has been good. And, although national focus appears to be on yellow rust, his main concern remains getting a handle of septoria.

"We're growing a wide range of varieties, mostly Oxford (DSV), KWS Palladium, KWS Extase, and a lot of LG Typhoon. Across this mix, some will be susceptible to the Yr15 breakdown and others won't.

"Because of our conditions and yellow rust being mostly isolated to parts of Hampshire and Wiltshire, I'm not expecting to see much of the disease. We'll have to see what the season throws at us."

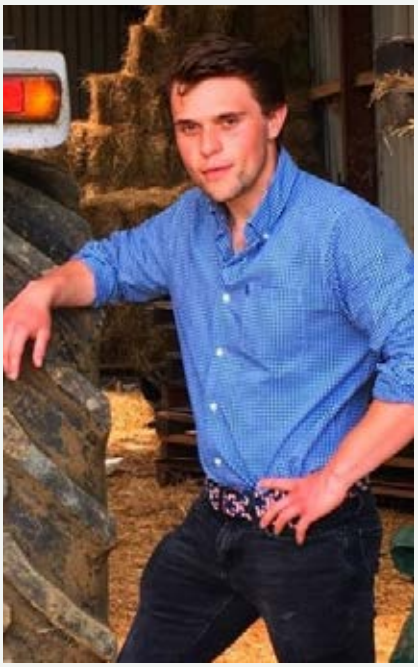
A few years ago, Ben trialled plant health elicitor Iodus (laminarin) in early-season disease control programmes. He points out that this led him to using the product across most of his wheat crops.

"What gave us the confidence to make it a staple T0 product was its longevity – it gives protective activity against septoria for 6-8 weeks.

"For the past few years, the weather window for applying T0s has been so tight that we haven't been able to get them on. When we could apply them, things were delayed, which then forced us to go earlier if there was an appropriate window."

According to Ben, his aim is to use laminarin in a similar manner to a vaccine. "The 6-8 week activity gives us a much greater range of timings from pre-T0 to after T0, when we can apply it and still get good activity."

With various plant protection options available to get septoria under control at T0, he comments that he uses laminarin in addition to the products he might recommend for yellow rust, helping to enable premium chemistry to be used at T1 and T2. "Iodus has its own purpose and it strengthens the rest of the programme," he comments.



Eliciting results

Agronomist Ben Allard trialled plant health elicitor Iodus (laminarin) in early-season disease control programmes; he now uses the product across most of his wheat crops.

The ability to slot laminarin into other early-season tank mixes has often been the deciding factor, suggests Ben. "We're applying a lot of Atlantis (mesosulfuron+ iodosulfuron) type products from mid-February to mid-March. Laminarin's ability to be incorporated into these tank mixes has come in handy, as has its compatibility with trace elements.

"This is because farmers don't want to be going through a crop with multiple passes for different tank mixes, they want to get it all done in one hit," he concludes.

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RL septoria rating decreases by 0.6 when drilled early. With most popular varieties scoring between 6 and 7 for septoria, early planting means they behave more like those considered susceptible to the disease, she adds.

In other work conducted by Agrii, the yield benefit of T0 has been evaluated. With data accrued since 2000, this suggests applying a T0 fungicide delivers an average 0.41t/ha yield benefit, but this fluctuates dramatically from season to season.

"In trials, whether it was a septoria or yellow rust season, we've seen a benefit in disease control and yield from adding a T0," says Jodie. "This can be as much as 1t/ha, but even in the lowest disease year, a T0 added 0.15t/ha. At the current wheat price, this still delivers a return to the grower."

In yellow rust-specific situations during the past three years, the average yield return has been slightly higher at 0.65t/ha, she comments. "So when you factor in the Yr15 shift going into this season, it highlights how critical T0 is going to be to keep ahead of the disease and mitigate yield losses."

Jodie believes that there's still useful chemistry to use at T0. "For yellow rust, we have mixed triazole products like Sakura (bromuconazole+ tebuconazole), which provides fast activity. There's also folpet to get septoria programmes off to a good start."

Strobilurins could factor in at T0 for rust control, but with only two applications allowed per season, Jodie suggests using one at T0 could limit product options for the subsequent timings.

"Conditions have been relatively mild so far this season, and brown rust remains active at around 7°C, so we really require some hard frosts to reduce inoculum and avoid an early epidemic as experienced in spring 2024.

"With sensitivity shifts reducing the efficacy of SDHI actives like benzovindiflupyr, strobilurins are an even more important chemistry group to tackle the disease later in the season," she adds.

Plant health elicitors such as Innocul8 also factor into considerations at T0, raises Jodie. Although they aren't fungicides, applying an elicitor early in the season can help to boost the plant's own natural defences, especially against septoria.

"We've seen Innocul8 deliver a very consistent yield benefit over several years with different levels of disease infection. It's a plant health product so supports disease control programmes; in the absence of disease, you still get a yield benefit from its biostimulant effects," she explains.

Jodie expects thorough crop walking in March will be even more crucial than usual this season for agronomists and farmers to ascertain the levels of disease present. This is especially true for yellow rust, which tends to develop in foci rather than across a field, she adds. ●

Debating the season ahead

As grain prices remain far from favourable, many growers are approaching crop management with caution this spring

Without a crystal ball it's difficult to predict what crops will require this spring in terms of disease control. However, one concern remains consistent – every penny of investment has to count.

Hutchinsons' Carrie Marshall says financial modelling undertaken by the company indicates a substantial increase in overheads plus a dramatic reduction in subsidies such as BPS and SFI. "For our model farm in 2026, it's a break-even situation, while last year, there was a surplus of £198/ha. The results are stark."

She adds that factors such as wage inflation, hikes in red diesel prices, and an increase in the Bank of England base rate are all contributing to the rise in on-farm overheads. "The most resilient farmers survive by having a true handle of their financial situation.

"This includes exploiting funding opportunities, spreading risk, growing a diverse range of crops to target different markets, and embracing data and technology. Not only does this maximise every hectare, but it also results in greater productivity and a sense of fulfilment," she explains.

As for crop management, Hutchinsons' David Howard

Making smart choices
If funds are tight this season, Hutchinsons' David Howard advises examining timings to use fungicides as strategically as possible.

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points out that it's also a challenging situation this season. "Despite recent new product launches, there are generally fewer fungicide modes of action available which results in a lack of activity and reduced curativity," he says.

"We're also seeing over-exposure of specific varieties leading to issues with resistance, such as the break-down of the *YR15* gene. Then, the changing climate is altering the severity of disease due to lifecycle shifts, which make predicting pressure much more difficult."

According to David, prior to the January cold snap, agronomists were reporting significant levels of yellow rust in certain crops. "The new yellow rust race is highly aggressive with a 'fitness' advantage; growers must be aware if they have one of the most affected varieties in the ground.

"Equally, conventional 'T' timings will be protracted if crops have been drilled early, with rust cycles hitting between each application. This is because T timings were created with septoria control in mind," he raises.

Moving to a proactive stance, David says early management is critical for rust control, and if pressure continues, a T1.5 application should be considered. "Keep gaps between sprays tighter and avoid overloading with early nitrogen. Spreading and mixing modes of action to target where they're most effective will help to utilise longevity where it counts most.

"However, if funds are tight, examine timings and use fungicides as strategically as possible – make smart choices and read risk correctly. You can't afford to undercut crop management and compromise yield, as that's crucial this year."

Cian Flavin is farm manager of the 1200ha Farleigh Wallop Estate in Hampshire. Growing all premium crops including milling wheat, HEAR oilseed rape and malting barley, he says regardless of the season, his approach centres around working closely with the estate's agronomists.

"Together we calculate our cost of production and as such, have already planned our budgeted spend for the entire rotation, to ensure we keep bench marking against the top 25% AHDB farms. We scrutinise the farming business hard and don't subsidise it from our diversification activities," he comments.

Following a 'kind' autumn, Cian adds that it's been a pleasure to farm during the past six months. "Moving into Christmas we were very happy with where crops were at; forward crops don't fear us. Now it's about assessing whether a T0 is required, and only if applicable, to ensure we retain value.

"Given our geography and the rainfall we tend to have, our main target will be septoria control. With the chemistry currently available, we don't perceive yellow rust as a particular risk," he explains.

Over at the Lockerley Estate and Preston Farms, Craig Livingstone manages 2300ha of cropped area across two sites, with a rotation including winter wheat, peas, beans, oats, OSR and spring barley. Similar to Cian, he says no 'free money' runs through the business, therefore its arable performance is highly critiqued.

To do this, Craig also benchmarks against AHDB's

top 25% [of farms], while targeting premium regenerative markets to bolster base prices. “48% of the crops that left our farm last year went into premium contracts, with our highest margin crop being winter oats.”

He says he utilises an IPM approach of growing the right plants in the right place. “It's all about optimisation of every input that we use. For this season, the reality is crops were drilled slightly earlier and for us, that will come at a cost, in possible PGR use and/or disease pressure.

“However, the farms are both looking well - crops have root structures at depth, naturally cultivating the soil and exchanging nutrients. Traditionally, we've not used a T0, although it all depends on the crop status as we move through the spring,” he concludes.

Carrie’s six steps to success

Building greater resilience in a testing year

1. Complete an enterprise review and introduce at least one new income stream if possible
2. Benchmark costs of production with a view to cutting overheads
3. Use precision data for informed decision-making
4. Create a budget and structured financial plan
5. Build soil health and carbon resilience
6. Develop people and create purpose within the business

Breaking even

According to Hutchinsons’ Carrie Marshall, wage inflation, hikes in red diesel prices, and an increase in the Bank of England base rate are all contributing to the rise in on-farm overheads.

Maximising the full NUE toolbox

Innovation doesn't have to mean new product introductions alone, it can also be taking a renewed approach to existing solutions or methodologies. *CPM* looks at how one agronomy company is combining new with old to tackle the topic of NUE.

By Janine Adamson

While innovation is frequently associated with new products or solutions, Agrii's Tom Perrott is quick to remind that it also refers to ideas. "It's not always 'innovative' technologies that deliver the best results in agriculture, it can also be better scientific understanding of what we already have, to improve how we use those tools," he explains.

And when it comes to the latest thinking on NUE, he's been applying this approach to help screen and select specialist nutrition products, to provide a breadth of scientifically-robust options for Agrii's growers.

To illustrate further, Tom Perrott raises his first example. "While the application of molasses is very much not new, what is different, is we're now understanding how it actually works in the soil, and how it's utilised by soil bacteria to cycle nitrogen which can be later taken up by a crop.

"Trials indicate that where additional nitrogen is applied in spring barley – a crop with a short growth cycle – although there's no yield benefit, when molasses is applied that additional nitrogen in the system is utilised to create more bacteria.

"So molasses feeds and therefore increases the populations of soil

Ticking off the basics

According to Agrii's Tom Land, a simple start for the season is to assess nitrogen in the growing crop's canopy – either by counting tillers or by measuring the green area index.

Numbers that speak for themselves

Making tangible NUE improvements at Sparsholt Manor Farm near Wantage

A move to embrace new technology and thinking while taking a holistic approach to farm management, is helping Oxfordshire-based Piers Cowling to improve the efficiency of nitrogen applications, boost soil organic content, and improve the effectiveness of the farm's agronomy programme.

Factors such as Sparsholt Manor Farm being 800 feet above sea level and on relatively light downland land can make getting the best out of the 1150ha of arable cropping somewhat difficult, with late drilling to control blackgrass not helping, explains Piers.

Despite the challenges, NUE has improved significantly in recent years, with Agrii-Start Liqui-Safe inhibitor being a key component of this, he adds. "We were previously using 220kgN/ha of liquid fertiliser in three splits, which we calculated was probably giving an NUE of around 50%, but since 2021, we've made a real effort to improve this.

"Liqui-Safe appealed because out of all the inhibitor options, it seemed to be the one with science behind it showing it affected soil biology the least – which is obviously important to us.

"Since we've been using it, we've gradually optimised fertiliser use to 160kgN/ha applied in two equal splits, which has raised NUE to 70% without any yield loss. At times we've used 120kgN/ha and seen NUE reaching nearly 90%," he explains.

Agrii agronomist, Iain Richards, has been advising at Sparsholt Manor Farm for 25 years. He says promising results are now being seen from using Agrii-Fortis CP in conjunction with Liqui-Safe. "Liqui-Safe slows down the release of nitrogen while Fortis CP contain high levels of carbohydrates which helps this nitrogen to be digested by the microflora. When the microbes then die and break down, this is released to the soils."

With good soil and plant health high on the farm's agenda, Innocul8 biostimulant and amino acid products are also used strategically, particularly to mitigate against periods of high stress in crops, raises Iain.

"Physiocrop – a tank-mixable fertiliser based on vegetable-derived amino acids which is applied through the sprayer – has proven very valuable in this regard. Then, Physio N – a foliar polymer nitrogen based on methylene and ureic N with amino acids – has also been beneficial."

Making gains
Despite various challenges, NUE has improved significantly in recent years at Sparsholt Manor Farm, says Piers Cowling.

According to Piers, the improvements in NUE speak for themselves, but other metrics are also underlining the success of the system. "Despite importing no organic sources of fertiliser onto the farm, soil organic matter has increased from just below 4% in 2018, to around 7% today.

"We believe that's purely down to our fertiliser strategy combined with reduced cultivations, cover crop use, all straw being incorporated, and just being more aware of actions that might affect soil health generally. We must be doing something right," he concludes.

micro-organisms, boosting rates of organic nutrients available to growing crops and helping to support the biological cycling of applied inputs."

This scientific backing is reasoning being the Agrii-Fortis range of liquid carbon additives, he continues, specifically Agrii-Fortis CP (Carbon Protect). "This is a molasses-based high-carbon and high-carbohydrate formulation, helping to improve fertiliser utilisation."

However, looking ahead to what's coming through the innovation pipeline, Tom Perrott highlights Beta Plus – a new prilled (granular) molasses product that should be available this spring.

"There are many benefits to prilling a liquid, namely easier handling, transport and application. However, it also means all of the amino acids and components of the molasses are very concentrated and highly loaded," he explains.

A second example Tom Perrott outlines is Agrii's understanding of the impact of urease and nitrification inhibitors. "Although effective at mitigating the risk of environmental pollution while increasing NUE, much of the inhibitor technology available at the moment is in fact based on older chemistry.

"Conversely, Agrii-Start Liqui-Safe is unique in that it delivers the inhibitor mechanism for improved NUE and reduced losses, while benefitting the soil biome and biology. As a water-

On-farm trials
Trying different fertiliser technologies at a farm-level can help growers with decision-making.

soluble organic compound, it has an excellent environmental footprint."

Although improving NUE can sometimes result in reducing the amount of applied nitrogen, Tom Perrott stresses that it must centre around being more targeted, rather than simply cutting back. "This means applying the nutrition that a crop truly requires.

"Consequently, an innovation we're launching this year is Triplex – bespoke soil-applied liquid starter fertiliser. How this works is, a soil sample is taken from the field pre-planting and a starter fertiliser is then calibrated according to the soil's nutritional requirements and the crop being planted.

"Growers can order small quantities such as an IBC, but importantly, this takes away all of the guess work when it comes to nutrition. We're really excited to be launching this; it's a key step towards helping all growers to optimise their crop nutrient efficiency."

But where do farmers currently stand this spring? Agrii's Tom Land believes in most cases, the nutritional scenario should be positive. "Because of extremely arid conditions in 2025, a lot of applied nutrition wasn't fully utilised by last season's crop, so there should be a decent bank of residual nitrogen in the soil.

"Winter crops that are already established appear to have accessed nitrogen well, and winter conditions so far have been relatively kind, potentially resulting in lower nitrogen losses this season," he suggests.

In agreement with Tom Perrott, Tom Land believes it's a combination of old and new methods which often yields the best results. "With residual nitrogen being present, a simple start would be to assess the nitrogen in the growing crop's canopy – either by counting tillers or by measuring the green area index.

"In doing so, it could be possible to make some savings this season, or to tweak application timings. Although it's impossible to say for certain, there should be some nitrogen left over from last year, which is particularly evident in crops such as oilseed rape."

He adds that with current prices, it's well worth utilising what's already 'in the system', whether that's in the crop or the soil. "Fertiliser is expensive and its value has to be understood versus yield or outcome.

"An average cereal crop of 500 shoots/m2 could have 5-15kgN in its canopy, but this year, some early-drilled crops could potentially have double that. As for OSR, we're seeing 50-80kgN in autumn-sown crops already.

"Some growers may be surprised by the nutrition being held in their crops. Afterall, the key to NUE is optimisation, and, factoring in the economics involved in achieving that. There's no point striving for the unachievable and spending a fortune during the process," states Tom Land.

Then, he highlights that growers could utilise SOM sampling undertaken for other purposes such as SFI reporting, to help indicate the state of their soils. "Fields with good SOM levels cycle nitrogen better, so if you have that data available to you, use it, as it could help to influence nutritional decision-making.

"Another useful measurement method is SMN plus soil testing, which helps growers to understand the two types of nitrogen within the soil: what's directly available at the point of sampling, as well as what will become available through the growing period as a result of mineralisation of organic matter. This test should be undertaken before nitrogen is applied, again to help fine-tune rates and timings."

Tom Land also wants growers to broaden their horizons beyond NUE meaning nitrogen use efficiency, and towards it involving all nutrients. "Don't take any nutrient in isolation – they all interact with and impact each other. For example, off the back of a dry season, fields can have a higher offtake of potassium.

"So rather than nitrogen, because these two nutrients are intrinsically linked, potassium could be the limiting factor for NUE and yield this spring, meaning it's well worth measuring and taking subsequent action."

While there's admittedly a lot for growers to digest when it comes to a 'contemporary' approach to crop nutrition, Tom Land raises that Agrii's extensive R&D work is what's driving the company's agronomic strategy.

"We're constantly trialling new sources of N,P&K and alternative tools to unlock their potential, comparing against conventional approaches. We also calculate the associated financials, to understand whether they stack up or not on-farm."

Tom Perrott concludes: "Often growers are looking for a silver bullet to answer many of their problems, but actually, they could be trying these different technologies at a farm-level to help inform their own decision-making. Agrii has already screened them during trials, so having the faith to have a go on-farm, in individual fields, could pay dividends."

Evidence for impact

With heavily marketed products and technologies regularly entering the agricultural sphere, often with bold accompanying promises, UK farmers have much to consider when it comes to selecting the tools to power-up their production systems.

Through an R&D-supported approach, Agrii aims to de-risk this selection process by providing hard evidence for what these introductions can deliver within real-life farming environments – and critically, whether the numbers stack up.

As such, this series of articles kindly sponsored by Agrii, will explore themes such as the importance of calculating gross margins, new supply chain initiatives, approaches to carbon foot-printing and how to best use new technologies.

***CPM* would like to thank Agrii for providing expert insight into these topics, and for the privileged access to the individuals involved.**

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Looking at lock up

"If you look at what's actually available to the crop, it's typically only 3-5% - that means around 90-95% is effectively locked up."

PHIL HAYGARTH

Phosphate is fundamental to crop performance, yet the majority of it never reaches the plant. Why does so much become locked up, and what can growers do about it? *CPM* finds out more.

By Charlotte Cunningham

If you stand at the edge of almost any arable field in the UK and consider the nutrients beneath your boots, one uncomfortable truth quickly emerges. For all the money, time and expertise invested in fertiliser programmes, some of what's applied never reaches the crop – and nowhere is this more evident than with phosphorus.

"Imagine there's 100% phosphorus in the soil," proposes Professor Phil Haygarth, professor of soil and water science at Lancaster University. "If you look at what's actually available to the crop, it's typically only 3-5%. That means around 90-95% is effectively locked up."

It's a statistic that gives pause for thought. Phosphate remains fundamental to crop establishment, resilience and yield potential, yet the overwhelming majority of it is sitting out of reach, bound to soil particles and unavailable to developing roots, at a time when growers are under increasing pressure to improve efficiency, reduce waste and justify every input.

Phosphorus has underpinned modern food production for decades, with mining and refining of rock phosphate transforming global agriculture and allowing soils to be supplemented far beyond their natural fertility. "It's done amazing things for humanity," says Phil. "It has supported modern farming systems and food security."

But its importance goes far deeper than yield alone, he continues. "It's part of DNA, part of seed germination, part of resilience – it's part of the fibre of crop production."

In other words, phosphorus is woven into almost every biological process that drives crop performance, meaning that when access is limited, the effects may not always be dramatic or immediately visible, but they are persistent.

Over time, restricted availability can quietly undermine rooting, canopy development and crop resilience, reducing a plant's ability to cope with stress later in the season.

Part of the problem lies in how phosphate behaves once it enters the soil, because unlike nitrogen or potassium, it doesn't move freely through the profile. Instead, it reacts rapidly with surrounding minerals, forming compounds that roots struggle to access, explains Phil.

The mobility of phosphorus is sensitive to soil pH, and it also tends to get locked up in precipitates bound with calcium, aluminium and iron. "It locks itself up, and once it's locked up, it's not very mobile at all."

As a result, many soils become rich in total phosphorus but poor in available phosphorus, creating a growing disconnect between what's present in the soil and what crops can realistically use.

Over years of application, 'legacy' reserves build up in inaccessible forms, while fresh fertiliser continues to be applied to meet immediate crop demand, reinforcing what Phil describes as an inherently inefficient system.

The consequences of this inefficiency are felt most keenly in the early weeks of crop growth, when phosphorus plays a central role in energy transfer and cell division, helping seedlings establish roots and build structural strength.

"Phosphate is primarily about rooting,"

A 'lazy' nutrient?

Part of the challenge is phosphate's fundamental lack of mobility in soil, suggests Origin's Toby Ward.

explains Toby Ward, nutrition agronomist with Origin Soil Nutrition. “That’s why it’s used so widely in starter fertilisers.”

Yet early spring is often when availability is lowest, because cold soils slow microbial activity and nutrient cycling, limiting the biological processes that might otherwise release phosphorus from bound forms – while young plants are simultaneously restricted by small, shallow root systems.

“You often see it in maize,” says Toby. “Purple leaves, stunted growth. Then, as soils warm up, the crop grows away.”

Cereals, oilseeds and vegetable crops can show similar symptoms, and while the effects are often subtle, they can influence tillering, rooting depth and canopy development throughout the season.

Research suggests young plants can devote up to 70% of their early energy to nutrient acquisition, meaning when phosphate is distant or inaccessible, that energy is diverted away from growth.

Part of the challenge is phosphate’s fundamental lack of mobility in soil, suggests Toby. “It’s a lazy nutrient – it doesn’t move very far.”

Once applied, it remains largely where it lands, which makes placement one of the most powerful tools available to growers seeking to improve uptake, he believes.

Broadcast fertiliser spreads phosphorus thinly across the soil surface, increasing the distance roots must travel to access it, while banding or placing nutrients close to seed concentrates supply where demand is highest, explains Toby. “If you broadcast it, you might not see the early uptake you’re hoping for; placement makes a huge difference.”

This is particularly relevant in reduced tillage systems, where stratification can develop and surface-applied phosphate may remain beyond the reach of deeper roots.

Toby adds that while growers have no shortage of phosphate sources, each behaves differently once entering the soil system, so considering this is vital to success.

Triple superphosphate (TSP) remains the dominant straight P fertiliser, while diammonium phosphate (DAP) is widely used in compound formulations. “DAP is popular for seedbed applications because it delivers nitrogen and phosphate together,” says Toby.

Organic sources complicate the picture further, as rock phosphates release nutrients slowly through chemical and biological processes, while manures and slurries contribute significant phosphorus in variable forms.

“People sometimes forget how much P they’re applying through recycled organic manures; it all adds up,” raises Phil.

As rotations diversify and nutrient sources multiply, understanding these interactions becomes increasingly important, he continues.

He believes that improving phosphate use is not only an agronomic issue, but also a strategic one, particularly as global rock phosphate reserves are finite. This is because while estimates vary, most suggest economically viable supplies may last only a few hundred years. “In geological terms, that’s nothing, so we have to be careful,” stresses Phil.

At the same time, excessive soil phosphorus increases environmental risk, with runoff and erosion transporting bound phosphate into rivers and lakes and contributing to eutrophication. “If it builds up in soil, there’s a greater risk that it’ll eventually end up in water,” warns Phil.

This places growers in a difficult position, balancing the desire for productivity ▶

Case study: Rix Farms, Essex

Getting to the root of the problem

Alongside better placement and planning, product technology is being used to address fixation directly.

Origin Enhanced Phosphate (OEP) is one example, using a carbohydrate-based polymer coating to protect soluble phosphate as it dissolves. "The coating has a high cation exchange capacity," explains Toby Ward. "It attracts iron, aluminium, calcium and magnesium, so they bind to the polymer instead of the phosphate."

By intercepting antagonistic ions, the coating prolongs nutrient availability in the root zone. "It's biodegradable, working with soil processes rather than against them," he adds.

Such technologies aren't being presented as silver bullets, but as part of a wider toolkit for improving efficiency – as one Essex grower has found. For Sam Rix, improving phosphate efficiency was never about cutting corners. It was about understanding where inputs were delivering value – and where they weren't.

Based at Great Horkesley near Colchester, Rix Farms grows onions, potatoes and cereals across around 2500ha in Essex and Norfolk. The business produces approximately 26,000t of onions each year, supplying major retailers including Tesco and Marks & Spencer through its sister company, Stourgarden.

With high-output vegetable crops at the heart of the rotation, fertiliser performance is closely scrutinised. "We feed the onions and potatoes quite hard," explains Sam. "We use liquid fertiliser at establishment, followed by granular applications. Rates of around 1000kg/ha on potatoes and 400kg/ha on onions are fairly typical."

However, onions present particular challenges, he says. "They're susceptible to leaf scorch, so granular is the only safe option once the crop is growing. But, they're also lazy rooters, so availability is critical."

To address this, Rix Farms applies an OEP prescription blend ahead of drilling, ensuring phosphate is positioned close to developing roots during establishment. "We want that nutrient there from day one," says Sam. "Getting establishment right sets the tone for the whole season."

Detailed soil analysis underpins fertiliser planning across the business, helping maintain and improve indices where required. "When we switched from standard DAP to OEP in 2022, it was very much a data-led decision," he explains.

Following advice from Origin agronomist Alan Gray, the business began trialling reduced phosphate rates on selected fields. "He suggested we could lower rates because of improved availability," says Sam. "Anything that makes fertiliser more efficient is worth looking at."

The results were closely monitored and the farm compared the reduced rate with its standard programme and saw no difference in establishment or crop quality. "That gave us confidence to roll it out across the acreage the following year," notes Sam.

Since then, phosphate applications have been reduced by around 15% across the rotation. The impact of this extends beyond onions and potatoes – because high phosphate rates are applied to break crops, residual nutrient levels are sufficient to support following cereals. "Our wheat generally only needs nitrogen and sulphur. The phosphate is already there," says Sam.

Regular soil testing confirms that indices are being maintained, reducing the need for corrective applications. Operational efficiency has also improved. "At very high rates, spreading becomes a logistical exercise," he explains. "You're constantly refilling and supporting the operator."

Reducing application rates by 15% has increased time between refills and streamlined operations during busy periods making life easier all round, he adds.

For Sam, the move to protected phosphate reflects a broader shift in approach. "It's about making sure what we apply is actually working," he says. "We're not interested in cutting back if it affects performance. But if we can use less and get the same result, that's a win."

With margins under pressure and sustainability rising up the agenda, that mindset is likely to become increasingly important. "It's about making every kilo count," he concludes.

Root cause
Sam Rix of Rix Farms applies an OEP prescription blend ahead of drilling, ensuring phosphate is positioned close to developing roots during establishment.

with the need to reduce losses and avoid unnecessary accumulation, he says. “Don’t just keep applying liberal amounts – think twice, be more modest, be more strategic.”

Soil testing remains central to that strategy, and under SFI and other schemes, regular analysis is now routine. However, data alone doesn’t guarantee better decisions, comments Toby. “It’s about interpretation, not just defaulting to a standard fertiliser every year.”

Indices, pH, organic matter and texture all influence phosphate dynamics, meaning two fields with identical P indices may behave very differently in practice.

As a result, Toby says it’s important to ensure focus is shifted to matching application rate, timing and placement to specific field conditions and moving away from blanket programmes towards more responsive systems.

For many growers, phosphate management is beginning to shift from a question of how much to apply, to how well it’s working. In Phil’s terms, much of UK agriculture is still operating on a relatively small slice of the phosphorus ‘pie’, while the rest remains locked away in inaccessible forms.

Improving access to that hidden reserve – through better placement, smarter planning and improved protection – represents one of the most significant opportunities for nutrient efficiency. “Phosphorus has given us huge benefits,” concludes Phil. “Now we have to use it more wisely.”

Underpinning modern food production

Professor Phil Haygarth of Lancaster University says the importance of phosphorus goes far deeper than yield alone, stating that it’s part of DNA, part of seed germination, part of resilience – it’s part of the fibre of crop production.

Product focus: Omex refreshes Fortiflo foliar range

Alongside soil-based nutrition, many growers are also using foliar applications to support crops when root uptake is limited by cold soils, dry conditions or nutrient lock-up.

Omex has recently refreshed its Fortiflo foliar fertiliser and biostimulant range, bringing existing and newer products together under a single portfolio. The firm says the update reflects a wider focus on improving nutrient efficiency and supporting crops through periods when soil supply is constrained.

The Fortiflo range includes formulations supplying readily available major and trace elements, alongside products designed to support plant metabolism and stress tolerance. Applications are typically used to complement base fertiliser programmes at key growth stages, rather than replace soil-applied nutrition.

According to the company, the refreshed range is underpinned by ongoing field trials and on-farm validation, with an emphasis on practical performance under commercial conditions.

Rainbow Agro: the strength behind the spray

"For UK growers, the Rainbow name may be new – but the principles behind it are familiar."

SIMON MCMUNN

Long-established behind the scenes, Rainbow Agro is now stepping into the spotlight in the UK and Ireland. With manufacturing, regulation and local support at its core, *CPM* explores what the business really offers British growers.

By Charlotte Cunningham

For UK growers, the crop protection market can often feel crowded with new names and changing brands. Occasionally, however, businesses emerge in the UK whose presence on farm predates its visibility on the label...

Such is the case for Rainbow. While the name is only now beginning to surface in the UK and Ireland, the business behind it has spent the past 25 years manufacturing active ingredients and formulated crop protection products that have already made their way onto farms – in some regions, operating under partners' brands; in others, with the Rainbow brand front and centre.

Now, with a growing European base and a clear intention to build a long-term presence in the UK, Rainbow is stepping out from behind the scenes. To understand what that means for British agriculture, it helps to start at the beginning.

Rainbow Agro was founded in 2000 in China by six chemical engineers, initially as a manufacturing business. In its early years, the focus was simple – build production capacity, invest in plant and supply active ingredients into domestic and export markets. As Rainbow's Paul Miao explains, that was very much a reflection of the time. "At the beginning we were just a manufacturer," he says. "China was developing very quickly and production was the obvious place to start."

But it didn't take long for the leadership to recognise that every market served presents a new challenge, as each region and geography is distinct. This has driven Rainbow to deliver flexible solutions for every

What's in a name?

There's a good chance a UK grower has already used a product that came out of a Rainbow factory without realising it, notes Simon McMunn, AgTIgrow.

Founded in China

Rainbow Agro was founded in 2000 in China by six chemical engineers, initially as a manufacturing business.

customer, whether they are industrial companies, distributors, or farmers.

Alongside continued investment in factories, Rainbow began putting significant resource into overseas registrations, laying the foundations for a business able to operate directly in international markets rather than purely behind the scenes.

This is how Rainbow consolidated its Business Platform – bringing together the strengths of a global, full-spectrum company with the dedication and professionalism of local teams to ensure high performance and efficient service delivery. The platform spans R&D, synthesis, formulation, state-of-the-art supply chain and logistics, regulatory affairs, and beyond, allowing the company to serve growers around the world, efficiently.

Over the years that followed, Rainbow's footprint expanded steadily. The business built strong positions across Asia, Latin America and Africa, gaining experience in a wide range of cropping systems and regulatory environments.

Simon McMunn of AgTIgrow, who now works closely with Rainbow in the UK, believes that philosophy remains central to understanding the business. "This isn't a company that comes into a market for one opportunity and then walks away," he says. "Rainbow is prepared to defend active ingredients where other manufacturers may decide it's no longer worth the effort."

As regulatory pressure has intensified globally, that willingness to invest has become increasingly relevant. In Europe in particular, the cost and complexity of maintaining registrations has led some suppliers to retreat. Rainbow has taken a different view, he points out. With a registration team of more than 200 professionals worldwide, the company has built strong local expertise, enabling rapid and compliant execution of all required registrations.

More recently, Rainbow's European ambitions took clearer form with the acquisition of a Spanish business based near Barcelona. The site now acts as the company's European hub, supporting regulatory, commercial and technical activity across multiple countries, including the UK and Ireland.

Luis Escauriaza, who joined Rainbow following the acquisition, says the move was about far more than geography. "The idea was to create a proper European platform," he explains. "Not just selling into Europe but building a business here that understands local markets and works closely with farmers and partners."

From this base, Rainbow has established activity across a growing number of EU states, supported by small local teams and long-standing distribution partners. The structure is intentionally lean – a contrast, staff say, to the heavier hierarchies seen elsewhere in the industry. As the youngest company among the global Top 10 in the crop protection industry, it continues to preserve a start-up mindset, reflected in agile operations and fast, effective decision-making.

That difference was immediately apparent to Szabi (Szabolcs) Munkácsi, portfolio development manager for parts of Central Europe, when he joined the company. "The biggest surprise for me was how fast decisions can be made," he says. "If there's a good idea, you can speak directly with the leadership team and make it happen."

Rainbow remains privately owned, with a relatively flat management structure. According to Paul, that makes a significant difference to how the business operates day to day. "One of our core values is rapid response," ▶

Roots in production

At the beginning, Rainbow was just a manufacturer, explains the firm's Paul Miao. China was developing very quickly and production was the obvious place to start.

he explains. “Customer inquiries are answered within 12 hours as a standard – setting the pace for how customers experience Rainbow differently.”

It’s a culture reflected in the workforce itself, which is relatively young and commercially focused. “Putting Rainbow’s business platform at the service of customers – whether partners or farmers – is how we grow,” he adds.

For UK growers, much of Rainbow’s relevance comes back to manufacturing – and the standards applied on the factory floor. Those who have visited the company’s facilities describe highly automated plants designed around consistency, traceability and control. Individual active ingredients are produced on dedicated lines, with systems designed specifically to minimise the risk of cross-contamination.

Szabi recalls questioning this early on. “We asked how cross-contamination is handled, because in many companies it’s always a concern,” he says. “They just laughed and said, ‘We don’t take that risk.’ When a new product is produced, a separate automated production line is built for it.”

It’s an approach that requires significant investment, but one Rainbow believes is essential – particularly in markets with strict regulatory oversight. Packaging and labelling receive the same attention. From container design to the records that sit behind each label, the focus is on ensuring what arrives on farm is exactly what was intended.

In practical terms, Rainbow’s emphasis on quality speaks directly to the realities of UK farming. With assurance schemes, residue limits and supply chain scrutiny all intensifying, confidence in what is being applied has never mattered more.

Simon draws on his wider industry experience to underline the point. “You can have the best label in the world, but if what’s inside the can isn’t exactly what it should be, you’re creating risk,” he says. “Residue issues, crop safety, operator safety – in the UK, that simply isn’t acceptable.”

Rainbow’s view is that disciplined manufacturing reduces those risks, while still allowing products to be offered at a price point that works in the current economic climate. Brand recognition is at an early stage, even though many of the active ingredients in its portfolio are already familiar.

“There’s a good chance a UK grower has already used a product that came out of a Rainbow factory without realising it,” notes Simon. “The aim now is that when they see the Rainbow name, they understand what it represents.”

> ***“This isn’t a company that comes into a market for one opportunity and then walks away.”***

Rainbow already has over a dozen of products registered for use in the UK, with further registrations planned over the coming seasons, subject to regulatory approval. The portfolio includes fungicides, herbicides and plant growth regulators based on established active ingredients.

Importantly, the route to market will be familiar. “Growers will be able to buy Rainbow products through the same distribution routes they already use,” explains Simon. “Whether that’s national distributors, buying groups or independent agronomy, there won’t be any barriers.”

Advice and recommendation will continue to sit with agronomists, supported by Rainbow’s technical data and manufacturing expertise. “Those advisors are the experts in the field,” he adds. “Our role is to make sure they’re fully backed up on product performance and technical detail.”

A quarter of a century after its foundation, Rainbow is entering the UK and Ireland to continue contributing value across the agricultural chain – standing alongside each partner, providing support at critical moments, and integrating productive, commercial, and human expertise.

As part of building its profile in the UK, Rainbow has begun engaging more directly with the industry, including through attendance at key events. The business made its first appearance at LAMMA earlier this year, using the opportunity to introduce itself to growers, agronomists and distributors and to start conversations about its longer-term plans for the UK market.

For UK agriculture, Rainbow aims to be recognised as much for quality and reliability as for value. If its growing presence builds the same on-farm confidence it has earned elsewhere, its name may soon feel as familiar as the chemistry behind it. ●

An EU base

Luis Escauriaza says the acquisition of a base in Spain was part of Rainbow’s ambition to create a proper European platform.

Agile decisions

Szabi (Szabolcs) Munkácsi, portfolio development manager for parts of Central Europe, says the biggest surprise for him when he joined the firm was how fast decisions can be made.

Company profile

CPM would like to thank Rainbow Agro for kindly sponsoring this article and for providing privileged access to staff and materials used to help put the article together.

Rainbow all about growing

Keeping weeds front of mind

Although early drilled crops often mean a compromise on grassweed control, it seems in most cases, pre-em herbicide programmes have delivered the goods. But as those residuals begin to run out of steam, *CPM* asks, what does that mean for the spring?

By Janine Adamson

According to weed scientist, John Cussans, the future is a lot like the past, only slightly different. In other words, while last season concluded with low weed populations and minimal seed return, that doesn't mean fields won't require monitoring this spring.

"Although we're not shaping for a complete meltdown in weed control this year – the situation appears to be quite good with plenty in our favour – we have to understand populations at a field-level," he urges.

"There may still be a flush – yes, lush crop canopies will help to suppress later geminating weeds, but the concern of complacency remains."

John adds that although there's a natural shift in focus toward fungicides in the spring, weed control shouldn't slip from the agenda completely. "Weeds have to be considered at the same time as planning fungicide programmes – they shouldn't be forgotten.

"Growers have spent money on robust autumn herbicide applications, but to get the maximum results, they should be followed up in the spring. With the rise in species such as meadow and rye brome, this could mean going out and specifically targeting those weeds because they've not been controlled at all by autumn herbicides."

Bayer's Chris McClymont highlights that this season's drilling dates will inevitably have an impact. "While early drilling is effective in ensuring a well-established, competitive crop, from a pure weed management stance, it creates problems. Therefore this season, many growers are relying heavily on residual herbicides doing a good job," he says.

Agrovista agronomist, Chris Martin, agrees that for his growers, the focus will be on any remaining grassweeds. "With some crops drilled in August in the North, populations are definitely there, while broadleaf weeds are less of a concern.

"Equally, for those who switched away from Avadex (tri-allate) at pre-em, wild oats appear to be thriving. That's perhaps been taken for granted in the past, but could come back and haunt us if we're not careful.

"Yes there are finite funds available so you can't use every active ingredient in a season, but when you substitute, you don't always consider the added value a specific product might bring."

While the efficacy of spring-applied ALS herbicides frequently comes into question, it's often due to an application error, rather than a breakdown in chemistry, he suggests.

"There are many cases where contact herbicides have been applied too late in the spring when the target weed is simply too big – that's not a resistance issue. Being ready for a bright sunny day, even in February, means weeds are targeted when they're small and applications will

A year-long battle

Weed scientist John Cussans urges that weed control shouldn't slip from the agenda in spring.

Five decades of blackgrass lessons shouldn't be forgotten

Grassweed control dominated discussions at the AICC annual conference recently

Looking back over 50 years of grassweed research, Dr Stephen Moss sees patterns repeating themselves. He worries that techniques can fall out of fashion, hard-won management lessons are forgotten, and optimism about new chemistry can run ahead of evidence.

Speaking during a workshop at the recent Association of Independent Crop Consultants (AICC) conference, Stephen argued that many of the fundamentals of blackgrass control remain unchanged. He warned against drifting back towards earlier autumn drilling, noting a dramatic historical shift.

"When I started in weed research in 1975, less than 5% of winter wheat was drilled in September. By 2012, that had risen to almost 60%. It happened because people chased yield and work rate, but it also coincided with rising blackgrass, septoria and BYDV. We then pulled back when those consequences became impossible to ignore; my concern now is that we're starting to drift earlier again."

Stephen stressed that delayed drilling remains a reliable cultural tool. Across decades of trials, it's consistently reduced blackgrass numbers by about a third, not through any single effect, but by stacking several smaller ones, he explained.

Later-emerging plants tiller less, compete less, and return fewer seeds. But perhaps more striking still, is its effect on residual herbicides. "People can overlook what I call the 'jewel in the crown'. A 3-4-week delay in drilling doesn't just reduce blackgrass numbers, it also makes pre-em herbicides work better.

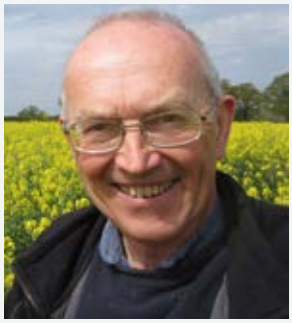
"In AHDB-funded trials, and in large company datasets of flufenacet-based pre-ems, we saw around 25-30% improvement in efficacy from drilling later. That's a significant gain, yet I don't see enough work asking whether the same benefit applies to newer chemistry."

On cultivation, Stephen refuted the idea that ploughing has no place. He argued that occasional rotational ploughing may become increasingly valuable and is convinced that in 10-15 years' time, it'll be seen as a useful part of all systems.

"Not every year, but occasionally. It helps to bury grassweed seed, moves immobile nutrients down the profile, prevents pH gradients, relieves surface compaction, and can reduce the build-up of surface organic matter that can affect residual herbicide efficacy," he added.

That build-up of surface organic matter, while desirable for soil health and soil fauna, is another concern. Stephen warned that rising adsorption in the surface layer can affect herbicide performance, yet little independent work is examining how modern residuals behave under these conditions.

Herbicide resistance was another area where he cautions of complacency. Drawing on 35 years of routine testing covering more than 3700 samples, he



Valuing existing knowledge

Dr Stephen Moss argued that many fundamentals of blackgrass control remain unchanged.

be effective, even if broader conditions aren't ideal."

According to Chris McClymont, this is the school of thought behind Atlantis Star (mesosulfuron+ iodosulfuron+ thiencarbazone), which can be applied from 1 February at the full rate, delivering 15g/ha of mesosulfuron. "It's less impacted by cold air temperatures, meaning those early applications will be effective. Travel as early as you can, for maximum control," he stresses.

"Equally, in going early and not mixing a graminicide with fungicides, you're avoiding complicated tank mixes which can ultimately compromise efficacy."

He also raises that given last year's news on glyphosate-resistant Italian ryegrass, work continues to understand the magnitude of the problem and that it should be a wake-up call.

Currently, there are only three absolute confirmed cases, with other samples being assessed. John says this still equates to a small handful of incidences spread across the country. "What we can conclude is that there's the potential to select for glyphosate resistance where there's high risk practice – a combination of factors such as dramatically reduced mechanical weeding, use of a low-disturbance drill, and repeated spring cropping.

"It all puts pressure on glyphosate and is what all of the confirmed cases have in common," he explains. "But despite this risk, given the limited number of cases, there's a small window of opportunity during the next season for us to focus on the problem, test suspected samples and hopefully prevent it from becoming widespread," concludes John.

Those concerned about a failure in glyphosate performance within Italian ryegrass should contact Bayer or ADAS. ●

flagged a specific finding. "What gobsmacked me was that for every herbicide we looked at, the decline in efficacy over time followed a straight line. No resistance researcher would predict that, yet there it was," he said.

For Atlantis (iodosulfuron+ mesosulfuron), efficacy declined by about 3.7%/year, while pendimethalin efficacy declined more slowly. "That backs up what farmers see in the field, but also shows that resistance isn't a sudden cliff edge. It's a steady erosion that people often ignore until it's too late."

Since retiring, Stephen has worked with water companies, focusing on propyzamide losses from the field. He's shown how moderate-mobility herbicides applied at high rates remain the biggest threat to drinking water, particularly where runoff occurs.

"When you see propyzamide washing off a field, running down a slope and closing a water abstraction point for weeks, science goes out of the window. In those situations, better decisions on rates, timing and preventing surface run-off matter far more than laboratory studies," he concluded.

Tackling the tentacled pest

"Grey field slugs were controlled within 48-hours following the ingestion of Ferrabait."

CATHERINE WHALEY

With oilseed rape creeping back into rotations, plus the ever-looming threat of wash-out UK weather conditions, slugs could soon slime their way into proliferation across many farms. However, there's a new molluscicide in the toolbox which promises to stop them in their tracks. *CPM* reports...

By Janine Adamson

The past exceptionally arid season aside, in many instances, UK arable land provides the perfect environment for slugs to not only survive, but thrive. From wetter, warmer winters to an increase in brassica-rich cover crops and leys in rotations, farms have evolved into a bountiful sanctuary for those of the gastropod world.

As with many crop pests, control options are limited, with just one existing active ingredient available to deploy once integrated pest management tactics have been utilised. However, following the launch of a new molluscicide from Adama, the tide could finally turn on these tentacled tyrants.

"Generally, slugs have been gradually increasing in pressure during the years, to a point where populations are significant – up to 60 slugs/m2 in some places," highlights the firm's Melanie Wardle. "Although they might not be front of mind following the extreme drought conditions of last season, they are for many growers, an unrelenting pest.

"So while ferric phosphate and alternative biological control products continue to have a place, we wanted to launch a product that would offer a step-up in slug control and address some of the drawbacks that farmers can face when using slug pellets."

The product in question is Ferrabait, a complex formulation of 12 components including new active ingredient feralla (elemental iron). Adama's Catherine Whaley explains that because feralla is toxic to slugs, it causes rapid cessation of feeding.

"Once ingested, the elemental iron in Ferrabait is solubilised which leads to pathological changes in the slug's digestive system and organs. This causes feeding to stop almost immediately, with mortality soon following.

"Critically, this process is rapid. During controlled field trials using brassica seedlings, compared with two leading competitor products, grey field slugs were controlled within 48-hours following the ingestion of Ferrabait. This was well ahead of the competitor products being screened," she continues.

"In terms of crop status, the untreated plots experienced 45% feeding damage after three days. But, the trial data indicates that by using Ferrabait, this is reduced by 95%."

Other benefits of the formulation come from the inclusion of wheat flours for optimum pellet palatability, and humic acid to stimulate feeding. According to Catherine, another hurdle to overcome in the pellet's development has been prolonging its efficacy when used in inclement conditions.

"The pellets must remain intact in wet weather, which is of course when slugs

Stopping slugs in their tracks

Adama's Catherine Whaley explains that because feralla is toxic to slugs, it causes rapid cessation of feeding.

Wireworm network seeks collaborators

A platform that aims to join up the industry's response to the threat of wireworm is looking for new partners

The European Wireworm Research Network (EWRN) brings together researchers, agronomists and industry stakeholders to accelerate understanding and management of wireworm across European cropping systems. Its aim is to improve knowledge sharing, coordinate research priorities and support practical solutions for growers.

To support a faster and more joined-up response, EWRN is seeking researchers, growers, and other industry professionals from crop protection companies, breeders, agronomy services, processors and supply chain organisations, to join the network.

It will then establish four technical working groups to bring together expertise from across Europe, to coordinate work to address the challenges posed by the widespread damage from wireworms.

With closer engagement, this should help identify the scale of the issue in different crops and regions, and accelerate the transfer of practical solutions to growers, says independent agronomist, Martyn Cox.

"Wireworm is no longer a localised or background problem – it's a growing threat to arable rotations across Europe. By bringing researchers, agronomists and industry together, we can build the knowledge base we require and ensure practical tools reach farmers quickly."

EWRN's most recent online workshop attracted strong attendance and positive feedback, reflecting the scale of interest and urgency from both research and industry, adds Martyn.

Those interested in joining the EWRN or participating in a working group are invited to register their interest at potatowireworms.com/member-area or email potato.wireworms@gmail.com

Collaborators wanted

Martyn Cox is urging individuals to join the European Wireworm Research Network.

Usability

Ferrabait pellets can be used with a range of commonly used applicators, with an online calibration tool currently being developed to assist with ballistic settings.

are most active. Additionally, if a product moulds then slugs won't eat it," she says.

Conversely, Ferrabait has been developed using Adama's 'desidro' wet processing and two-stage drying technology, which is also a feature of the firm's Gusto Iron (anhydrous ferric phosphate) slug pellets.

"This proven manufacturing system produces pellets with the ideal balance of persistence in wet weather and palatability over a longer duration. This means Ferrabait pellets remain mould-free and attractive for longer than other slug baits."

To demonstrate this in action through trials, 4mm of simulated rainfall was applied to Ferrabait pellets and two competitor products for 10 days. Catherine highlights that because of Ferrabait's coating, the pellets remained clear and therefore active for ingestion by slugs, while the competitor products both developed mould.

Moving on to baiting point optimisation, she says being 2.5mm by 2.1mm, Ferrabait pellets spread accurately to wide operating widths, providing the ideal number of baiting points (40-50 pellets per m2) when applied at typical field rates. They can also be used with a wide range of commonly used applicators, with an online calibration tool currently being developed to assist with ballistic settings, she points out.

"In contrast, smaller 'mini' pellets have a larger comparative surface area and therefore tend to degrade more rapidly in wet conditions. They also don't spread as accurately at wider spreading widths, while larger pellets provide too few baiting points," comments Catherine.

She stresses that to be effective, ultimately, a slug pellet must be attractive and palatable. "We know that 70% of slugs feed within 90 minutes of Ferrabait application, which is why knock-down is so fast for this product.

"It also takes less than one pellet to provide a lethal dose, with the rest remaining for the next slug to ingest, which is very efficient. This is a key, unique selling point of Ferrabait's performance."

According to Catherine, the product is 'much more than a new active ingredient'. "With superior palatability, it simply really appeals to slugs."

Looking at on-farm experience, with extreme arid conditions making last year a relative non-starter in terms of slug abundance, information is currently limited. However, among those asked to trial the product is Ceres Rural's Ed Thompson – also a member of the Association of Independent Crop Consultants (AICC).

Reflecting on the importance of gaining a new active ingredient, he says with a general desire to push wheat margins and the uncertainty of future SFI options, farmers are rightly looking to introduce more break crops into their rotations. "But, there are three or four slug species which can significantly impact germination and establishment, particularly after crops such as OSR.

"As an agronomist, having the option of different active ingredients and pellet shapes offers the opportunity to target slugs at the right time, increasing the likelihood of successfully establishing the crop," he comments.

Ferrabait will be available for use on farm from autumn 2026, with an authorisation for application across all edible and non-edible crops. The maximum individual dose rate will be 8kg/ha, for up to six treatments a year.

Smith's SOAPBOX

WITH GUY SMITH

Fifty year low point

Not for the first time, February finds me in a reflective mood. It occurs that I'm now of an age that I can claim to have seen some 50 harvests. In deference to my father and his staff at the time, I wasn't exactly a vital cog in the first few; the most I was to be trusted with was a broom and a shovel.

I could claim to be in charge of grain-store vermin control, but that was the responsibility of a Jack Russell terrier called 'Sandy', whose all-consuming hatred of rats was only surpassed by the dog's ability to dispatch a mischief (the collective noun of rats) in a matter of seconds. So strategically effective was this Jack Russell, that it'd optimise its impressive kill rate by merely disabling the first few so it could return to them having dealt with the tail enders.

One harvest job I was given back in the day was being in charge of the weighbridge. For reasons I'm not quite sure of, dad, in the 1970s, went to the trouble of installing a pucker, pit-mounted, 12x4 yard table, Avery weighbridge. As a teenager, I had the job of recording the loaded weight then tare weight of every tractor and trailer that returned from the harvested fields.

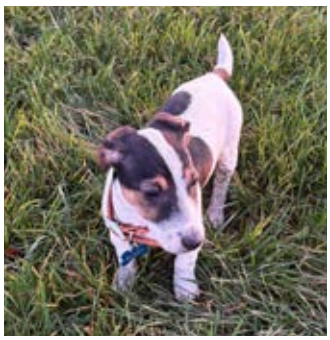
At the end of the day I took great delight in telling dad what the tonnage for each field was to the nearest kilogram or pound. In this role I felt like 'the brains' of the operation, whether anyone else in the harvest team thought so is doubtful.

Looking back at my weighbridge notebook, 1984 stands out as we averaged more than 4t/ac across the farm. That same notebook records the wheat varieties, which had names from some sort of Camelot playbook – Galahad, Avalon and Longbow.

What concentrates the mind now is that we've never really surpassed that yield milestone. Even more, is the fact that in 1984/5, wheat was worth £110/t, giving a gross margin of £440/ac. If you factor inflation into that number, you get the rather eye-wateringly figure of £1730 in today's money.

When I compare that with last year's harvest at a miserly £635 (this includes a rather paltry de-linked SPS payment), you wonder if arable farming has slipped into some kind of terminal death throe.

To cheer myself up, I thought back to those 50 harvests to speculate if 2025 is some sort of low point. I seem to recollect that the wheat price in the early years of the new millennium sunk to the depths of the £70 mark. Yields at that time on this farm were around the 3t/ac, giving a gross margin of £210. For contextual accuracy, we should add onto this the IACS cereals acreage payment we received of £90/ac, equating a gross figure of £300.



I thought I'd introduce 'Buddy', our new Jack Russell terrier. Apart from having a life-long admiration for the breed, a key driver was the news I can no longer purchase rat poison strong enough unless I return to the class room to pass an exam. So I've opted for a four-legged soon-to-be 7kg rat killing machine.

If we adjust that £300 for inflation, the figure is £630. So the good news is, that in terms of gross margins, by a very slim £5/ac, we aren't currently at a worrying nadir in my harvest memory when it comes to wheat production.

The bad news is, if you consider in the early 2000s land prices were around £2500/ac, ammonium nitrate fertiliser was £135/t and wages were £5/hour, then 2025 probably is a low point when it comes to the profitability of an acre of wheat. Looking on the bright side things can only get better from hereon – can't they? ●

YOUR CORRESPONDENT

Guy Smith grows 500ha of combinable crops on the north east Essex coast, namely St. Osyth Marsh – officially the driest spot in the British Isles. Despite spurious claims from others that their farms are actually drier, he points out that his farm is in the Guinness Book of Records, whereas others aren't. End of. @essexpeasant

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What a belter!

Developed from scratch using a new breeding programme, Belter is a malting barley variety that promises to be exceptional, whether it's grown for brewing or distilling. *CPM* finds out what makes this 'true' dual-purpose variety out-spar its peers.

By Janine Adamson

With full approval for brewing from the Malting Barley Committee, as well as claiming the top spot in its category on the AHDB Spring Barley Recommended List, it's undoubtedly a strong start for Belter.

And according to Secobra's breeder Paul Bury, while Belter is the company's first 'big' variety launch in the UK, it's already packing a punch across all key attributes. "Belter is a consistently high yielding dual-purpose variety with improved grain quality, a comprehensive disease package, stiff straw and an excellent malting profile for both brewing and distilling.

"During the past five years of its development, Belter has performed reliably in the field and in the lab, with consistently high yields across all regions, so proving itself to be a highly adaptable variety. In fact, based on RL yield data during that period, Belter wasn't outperformed by any brewing, distilling or dual-purpose variety. It offers growers and end users a real step-up in performance," he says.

Scrutinising the variety in more detail, Paul highlights some key RL numbers. "Scoring 104 for treated yield in the UK and 89 for untreated, is why Belter ranks top for yield. It performs consistently across all regions: East (104), West (105) and North (104), despite the challenging, highly variable conditions experienced during the trial periods.

"This is also backed by solid agronomics: 7 for lodging resistance, 8 for brackling resistance, 8 for mildew, 5 for brown rust, 6 for rhynchosporium and 7 for net blotch. It has no obvious weak points," he comments.

However, with quality attributes critical in the malting sphere, what's given Belter the edge to ultimately result in its MBC approval? Paul points out that the variety delivers on grain quality, notably improved specific weight (68.4kg/hl) and lower screenings than competitor varieties.

Then in brewing trials, Belter has presented high hot water extract (315 l°/kg), good fermentability, and optimum enzyme levels for brewing and export requirements. "Furthermore, Belter's predicted spirit yield is 437.4 laa/t with an acceptable nitrogen content.

"It's a true dual-use variety for brewing and distilling without compromise, meaning it's consistent and flexible,"

Top performer

Belter is the only viable new malting barley moving through 2026, developed by a breeder that really supports the sector, suggests Secobra's Paul Bury.

Standing out

Agrii's Colin Patrick believes Belter's consistency could make it a compelling contender to work alongside the current market-leader.

suggests Paul. "As we see it, it's the only viable new malting barley as we move through 2026, developed by a breeder that really supports the sector."

Agrii trials manager, Colin Patrick, agrees that Belter is an attractive proposition, raising that the agronomy company has trialled it across a range of different locations since 2022, which is key when a variety is being pitched as dual-purpose.

He believes that Belter's consistency could make it a compelling contender to work alongside the current market-leader. "This would spread the risk more evenly rather than relying on a sole variety and its associated genetics.

"Equally, as the ag chem toolbox continues to dwindle, varieties must offer strong agronomic packages and decent untreated yields. So regardless, due to our confidence in Belter, it's definitely an option we'll be recommending to growers."

According to Crisp Malt's Dr David Griggs, current industry demand lies in dual-purpose type barleys. "The industry is looking for varieties that will stick around for a while, so they have to deliver consistent results," he says.

David adds that another factor growing in importance is environmental impact. "Priorities are changing and shifting. As such, varieties that offer lower emissions through improved NUE will become increasingly attractive, the same for those with good untreated yields that perform in low-input systems."

In terms of how Belter has been performing on-farm, East Lothian grower Natasha Findlay thought 'why not' when offered a trial of the variety. Natasha, who manages around 265ha at Pitcox Farm in Dunbar with her mother and sister, says with just 16ha of spring barley in the 2025 rotation, she perceived it as low risk.

"We have a fairly standard rotation comprising winter barley, winter wheat, oilseed rape, peas and spring barley; historically this has been a good malting barley area.

"We might have been a little more cautious about trying something new on one of our bigger fields, but it was a relatively small spring barley year in the rotation so thought we'd give it a go," continues Natasha.

Belter was drilled on 12 March 2025 into medium loam soils that had been ploughed during the winter. P&K were applied at variable rates based on soil mapping, plus two applications of Amidas (40%N +14% SO3) at 150kg/ha on 14 March and 8 April. The crop also received a full agronomy package including biostimulants, herbicides and fungicides.

Despite a long dry spell post-drilling with no significant rainfall until late May, Belter was one of the best crops on the farm, highlights Natasha. It was then combined on 13 August, yielding 3.5t/ac (8.6t/ha) and producing a bright sample in the intake pit.

"It was a good, thick, crop, with ▶

Leap of faith
East Lothian grower, Natasha Findlay, thought 'why not' when offered a trial of Belter.

fantastic straw," reflects Natasha. "We do a muck-for-straw swap with a neighbouring pig farm and the straw yield was really good, it certainly did a lot better than the winter barley.

"I'm pleased with how it's done yield- and quality-wise, especially in a very dry year, it would be interesting to see what it does in better conditions. It also passed all malting specifications with flying colours and the grain nitrogen remained low in a year where there were a lot of high nitrogens locally."

For this season, Natasha adds that the farm has a larger area of spring barley and hopes some of this will be Belter. "Put it this way, if someone asked if I wanted to it grow again versus the current market leader, I'd say yes."

Landing with impact

Secobra might be new player in the UK, but the breeder is striving to make an impact in malting barley

By the industry, for the industry, is Secobra's mantra. Arguably, that's a worthy strapline given the breeder's shareholders include maltsters, brewers and distributors.

Consequently, the company's aim is to launch varieties that address supply chain demands, explains commercial manager, Tom Barker. "Our ambition is to truly lead the way in malting barley," he says.

As for the company's newest launch – Belter – the variety's journey began back in 2017 when the team sought to establish a UK-focused breeding programme from scratch. While this could have been perceived as a challenge, with no genetics to take forward, it actually meant a starting point that was the best it could be, suggests spring barley breeder, Will Pillinger.

"We could begin our UK journey with a modern, science-based approach to breeding that was fit for the 21st century," he adds.

By 2018, what was to become Belter had been crossed in the UK, and the breeding programme was officially launched to the industry. After much work – from field assessments and lab analysis, to developing disease resistance and trait discovery – Belter became a reality.

Will explains that during this time, not only was a larger UK team created, but Secobra also established a dual-breeding location, with sites in the North and the East. "This was all done to establish a modern, competitive new breeding programme within just a few years," he concludes.

The Cinderella crop steps into the spotlight

Increased plantings, renewed processor demand and better spring varieties are reshaping the role of oats in arable rotations. As growers look for flexibility and reliable margins, *CPM* finds out how agronomy and genetics are helping lift this 'Cinderella crop' into the spotlight.

By Charlotte Cunningham

There's a familiar rhythm to British arable rotations: headline crops take the limelight, while others quietly earn their keep in the background.

Oats have arguably long sat in that second category – useful, perhaps less glamorous, sometimes underestimated. Yet a combination of forces is now nudging them closer to centre stage, from changing rotational pressures and policy incentives to renewed processor demand and a step-change in spring oat genetics.

Figures from AHDB suggest the UK oat area for 2025/26 is set to rise by around 15%, taking total plantings to more than 210,000ha – the highest for five years. For many businesses, oats are answering several questions at once: rotational flexibility, manageable input costs, and access to food markets that place a premium on domestic supply.

One of the defining features of the oat market is its lack of flexibility. As Jonathan Arnold of independent merchant Robin Appel puts it: "If you're making oat products, you have to have oats." Unlike feed markets, where commodities can often be substituted, processors producing flakes, porridge or oat drinks require a consistent flow of suitable grain, both in volume and quality.

That reality has become more important as food manufacturers place increasing emphasis on provenance. Moves by major brands to source exclusively British oats have given the domestic market renewed structural support, while more farms are developing their own oat-based products to avoid imported grain and the costs and complications that accompany it.

That said, Jonathan describes recent seasons as a 'rollercoaster'. Poor harvests in Canada and Scandinavia boosted export demand, only for global supplies to rebound and create oversupply. With total UK demand sitting below 1M tonnes, relatively modest changes in planted area or yield can swing the market quickly, he explains.

As well as demand changes, the renewed interest in oats is grounded firmly in agronomy, too. Brin Hughes, agronomist at Richardson Milling, describes oats as a valuable 'white straw break' and a practical alternative where oilseed rape has fallen out of favour. But, he's equally clear about what's driven the move toward spring cropping.

"Blackgrass has changed everything," he points out. "If you have blackgrass, winter oats are risky. Spring oats give you a chance to reset."

Shaun Jenkins, senior grain manager at Richardson Milling, agrees. Historically, the company favoured winter oats – particularly long-established varieties such as Mascani – for their consistency and milling quality. However, grassweed pressure has forced many growers into spring systems. "In the past three years, we've gone from probably 75% winter oats to something closer to 50:50," he explains.

For many farms, spring oats now sit neatly alongside cover crops, delayed drilling strategies and workload ▶

Valuable cropping

Brin Hughes, agronomist at Richardson Milling, describes oats as a valuable 'white straw break' and a practical alternative where oilseed rape has fallen out of favour.

management, while still offering access to premium food markets.

Furthermore, oats are often described as 'low-input', and in one sense they are. Compared with wheat, they typically require fewer fungicides and simpler management. But that reputation carries a downside, warns Brin. "Oats are still treated like a second-class crop. People grow them the way their grandparents did."

That legacy thinking shows up in late drilling, excessive seed rates and cautious nutrition, all of which quietly limit performance, he adds.

First and foremost, Brin argues that spring oats should be drilled as early as conditions allow, ideally from mid-February onwards. This is because yield and quality fall away rapidly once drilling slips beyond mid-March, while pushing into April almost guarantees disappointment. He stresses that oats benefit from time in the ground, with stronger rooting, better tillering and more even ripening linked to early establishment.

Seed rates are another weak point. For early drilling, Brin suggests around 200 seeds/m^2, rising to around 300 seeds/m^2 into March. Yet many crops are still drilled far more thickly, he says, producing dense canopies that struggle to tiller and fill grain properly.

Nutrition is the third pillar. Because oats are seen as low-input, they are frequently underfed, but on suitable soils and with good establishment, Brin believes nitrogen rates of 125-150kgN/ha can be justified to support both yield and consistency, despite the tension with sustainability targets.

He believes much of this caution is inherited – fears of lodging still linger from the days of tall, weak-strawed varieties. However, modern oats are shorter, better rooted and more resilient, and early drilling and sensible seed rates can do far more to reduce lodging risk than starving the crop, he states.

While growers often focus on yield and price, millers assess oats through a more complex lens. Moisture, specific weight and screenings all matter, but one of the most critical parameters is hulling loss, points out Brin. "We want the groat, not the husk. Some varieties dehull cleanly, others take more passes through the machinery."

Against this backdrop, variety choice has become more strategic. It's no longer about chasing headline yield alone, but about balancing output, consistency and market suitability, says Jonathan. "For years it was basically Banquo and Firth, then suddenly everything started improving," he recalls.

One of the varieties emerging from that progress is Caledon. On the AHDB Recommended List, Caledon leads the five-year average for spring oats, achieving 104% of controls in treated trials and 97% in untreated. In the difficult 2025 season, it again topped the table, reaching 105% treated and 99% untreated.

Its breeder, Elsoms, highlights high kernel content, strong specific weight, low screenings, good disease resistance and early maturity as its key benefits.

Richardson Milling has subjected Caledon to extensive in-house testing, with Brin comparing it directly with established varieties such as Merlin and WPB Isabel. In replicated trials in 2024, Caledon produced yields of around 7t/ha in Suffolk, sitting competitively alongside Merlin and Isabel, while maintaining specific weights above 50kg/hl.

In 2025's dry conditions, it again performed strongly, delivering some of the best yields in both Suffolk and Hampshire, he points out.

Commercial testing is now following, with Richardson Milling contracting around 1000t. "Trials are great," he says. "But until you have lorries coming in, you don't really know."

What seems to be emerging from across the supply chain isn't a story of oats becoming glamorous overnight, but of them becoming more respected. Better genetics are closing the gap with winter types, improved agronomy is lifting consistency, and processors are investing in domestic supply.

It could be argued that Caledon is part of that picture – evidence of how far spring oats have come. If growers meet oats halfway, this long-standing 'Cinderella crop' may finally be ready for a more central role in the rotation.

Oats need oats

One of the defining features of the oat market is its lack of flexibility. As Jonathan Arnold of independent merchant Robin Appel puts it: "If you're making oat products, you have to have oats."

Farming with spring oats in Hampshire

A tricky year but Caledon delivers on quality

Until recently, Adrian Dixon farmed around 400ha in central Hampshire on predominantly medium loams over chalk, with lighter patches on higher ground. Spring oats have featured in the farm's rotation for more than a decade, largely in response to grassweed pressure.

Oats typically follow spring barley and multi-species cover crops, grazed by sheep through winter before being sprayed off in late January or early February, with shallow cultivations ahead of drilling in early to mid-March.

"We always aim to be in by the middle of March," explains Adrian. "If you slip much beyond that, you're chasing the season."

In 2025, he grew Caledon for the first time, attracted by its performance on the Recommended List. "On paper, it stood out above the rest. So we felt it was worth a look."

The crop established well in March before prolonged drought took hold. Despite the conditions, Caledon maintained reasonable standability and tiller retention. Final yields averaged around 6t/ha, roughly 1.5t/ha below the farm's long-term average, which in favourable seasons reached 8-8.5t/ha. Quality, however, proved more resilient.

Grain specific weight averaged close to 52kg/hl, comfortably above the 50kg/hl threshold, with low screenings and acceptable kernel content; all loads met specification.

The crop was marketed through a minimum price contract arranged earlier in the season, helping to protect margins when spot values later fell to around £120/t ex-farm. Straw was chopped post-harvest, while volunteer control was prioritised ahead of wheat to reduce BYDV risk.

Despite only one season with Caledon, Adrian remains positive. "It was a tough year to judge any variety, but in difficult conditions it still delivered milling quality," he says. "On that basis, I'd definitely look to grow it again."

Helping soils to weather the storm

"Understanding the effects of additional rainfall on structural stability is increasingly crucial to maintaining soil health."

PROFESSOR PAUL HALLETT

UK soils are at risk of increasing deterioration due to higher winter rainfall and more frequent storms. *CPM* speaks to the experts, to hear their advice on treading carefully when it comes to spring cropping this season.

By Mike Saull

There's no doubt that as the UK's climate warms, winter rainfall is reaching record levels – in fact, virtually all additional rain occurs in the six months from October to March.

According to Met Office data, between 2015-2024, the UK six-month winter period received 16% more rain than it did in 1961-1990. Combine this with continuous cropping and over-loosening, and perhaps unsurprisingly, weaker soils are being compromised.

Professor Paul Hallett of the University of Aberdeen is part of a team whose research across Scotland confirms that compaction and other forms of soil structural degradation are increasing and occurring at greater depth in the soil.

Couple this with the failure of drainage schemes now long past their use-up period, and untimely, excessive working of soils, then it's becoming an issue that growers can no longer afford to ignore, he warns.

"Understanding the effects of this additional rainfall on structural stability is increasingly crucial to maintaining soil health and ensuring sustainable agricultural practices," he continues.

KNOCK-ON EFFECT

"Greater waterlogging for longer periods means fewer operational days. Plus, with more erratic weather, soil damage is greater and compaction is lasting longer, potentially impacting subsequent crops in the rotation.

"Not only are yields less consistent, but year-on-year there are implications for harvest timings and subsequent crop establishment, so there's an annual knock-on effect," explains Paul.

Working with The James Hutton Institute, the team from Aberdeen assessed a range of soils across four catchment areas to examine arable and grassland sites at risk of soil degradation during the winter.

The survey included a wide distribution of variable soil textures and theoretical compaction risks across Scotland. Researchers recorded the ▶

Long-term impacts

With more erratic weather, soil damage is greater and compaction is lasting longer, potentially impacting subsequent crops in the rotation, suggests the University of Aberdeen's Professor Paul Hallett.

state of soil structure in the winter using the Visual Evaluation of Soil Structure (VESS) and Subsoil Structure (SubVESS), scores across 140 fields.

Then, following Storm Frank in winter 2015-16, when Eastern Scotland received 228% of its average January rainfall, 42 of these fields were resampled to assess the effects after the period of intense and prolonged precipitation.

Initial results prior to the extreme January conditions revealed that 18% of topsoils and 9% of subsoils were severely degraded. However, following the record wet winter weather, there was a 30% increase in occurrence of structurally degraded topsoils, illustrating the extreme effects of rainfall on soil stability.

In addition, run-off, erosion and nutrient losses were around 10 times greater than they'd been before from degraded parts of fields such as tramlines, compared with areas within the field or at less trafficked boundaries.

A follow-up survey of the farmers who managed the fields examined by the researchers – alongside visual observations – suggested that widespread degradation of artificial drainage was a contributing factor, highlights Paul.

"Physical soil assessments found that finer textured soils on the west coast were among the most prone to damage and difficult to work with.

Drought survival

According to Agrii's Amy Hardwick, crops in healthier, well-structured, higher organic matter soils fared better in last year's dry spring and summer conditions.

Capturing new data

Jessica Brook (pictured) has recently reassessed fields from a long-term soils research project, using a penetrometer to measure physical resistance.

Alluvial soils with a high silt content were also incredibly sensitive to structural degradation and compaction, as were poorly drained gley-soils that are often waterlogged for long periods."

STARK REALITY

"All-in-all though, the fact that around 20% of soils surveyed across the study were seriously degraded and not working at any potential, is very concerning," Paul says.

More recently, University of Aberdeen PhD student, Jessica Brook, revisited the same sites, carrying out both visual assessments and penetrometer tests to reassess the structural health of the soils.

"While the data is currently unpublished, early penetrometer results indicate several of the sites still have structural damage, most noticeably at subsoil depth. However, visual evaluations indicate that for others there's been an improvement over time, showing that with good management practices, structural recovery is possible," explains Jessica.

Paul suggests that as damaged soils dry out in the late spring and early summer, they become stronger, resulting in roots unable to push through them to seek out the moisture below. "It's a form of 'mechanical drought' due to soil density and can be quite persistent," he adds.

"Some soils will recover if deeper rooted crops in the rotation or cover crops that can push through these layers are sown. Natural shrinking and weathering and the addition of organic matter that works its way down into the profile will also help, but we do have to be careful to not increase the problem to depths where mitigation is more difficult or impossible."

According to Paul, reduced autumn/winter traffic, greater incorporation of soil organic matter and avoiding root crops on vulnerable soils are all practices that could reduce the problem. He points out that while more farmers are recognising such issues and re-investing in drainage using new installation techniques, the deterioration of UK soils and more erratic weather still restrict access to fields at key periods.

As farmers move towards reduced cultivation, there may be benefits to the topsoil, but shallower plough-pans could exacerbate the impacts, he stresses.

So, what else should farmers do to reduce the risks? Paul believes the first step should be to note which fields are most susceptible and then draw up a plan of action to remediate and minimise further compaction risks.

"Obvious visual damage is seen following prolonged periods of winter rainfall on newly established cereal crops where recently loosened topsoils are more prone to re-compaction. This results in slumping around establishing roots and resettling of the loosened seedbed which becomes waterlogged.

"More worrying, is the build-up of compaction at and below cultivation depth and this should be checked using

a spade. There are also greater risks of erosion from storm water unable to penetrate compacted soils and then running-off the land taking soil with it."

TRAMLINE TROUBLES

Paul says that studies at the James Hutton Institute in collaboration with Lancaster University indicate that 80-90% of the soil loss from UK fields occurs due to run-off from tramlines, as such, the integration of crops such as maize isn't helping.

He adds that while it may seem sensible to subsoil these tramlines in the late autumn, the loosening of soils weakens them meaning they could compact and slump into a worse state, should there be more prolonged waterlogging.

As a result, Paul supports the current trend of maintaining the same tramlines in each successive crop, but employing some sort of physical intervention along them to reduce prolonged periods of run-off.

"Don't underestimate the price of soil erosion leading to soil and nutrient loss and significant clean-up costs. This can be highly significant in intensively cultivated soils, particularly those down to horticultural and root crops.

"Only around a half of applied nitrogen is captured by the crop with significant quantities lost in wetter conditions that encourage anaerobism or leaching. Phosphorous retention is also an issue."

> ***"With good management practices, structural recovery is possible."***

Significant soil loss and erosion damage is also seen following root crops – particularly where the soils is left bare – meaning it's increasingly important to leave cereal stubbles in-tact over the winter period prior to preparing ground for spring crops, suggests Paul.

However, root crop harvesting is increasingly in the hands of contractors and, faced with more erratic weather events, this means crops can be lifted in less than acceptable conditions. Even where contractors use tracked vehicles, their vehicular weight is such that the damage they leave is often greater than that a farmer would want, he adds.

In a move to reduce risks when establishing winter crops, it's a case of reducing tillage and leaving soils relatively undisturbed, or growing cover crops as an alternative strategy, says Paul.

"Then during the spring, a positive option could be to reduce tillage and only carry it out when soils have dried out sufficiently to take traffic. Overworking of a seedbed and operating too deep when soil moistures are sub-optimum will lead to long-term deterioration of soils.

"Increasing the carbon content of the topsoil will help to stabilise soil structures in the long-term, but ultimately, winter cropping could be increasingly compromised on some of our weakest soils in the wettest regions, especially if rainfall continues to rise."

Where risks are great, cover cropping by selecting the best species to anchor soils, or to help penetrate compaction at depth, is beneficial; a change to reduced tillage will also have a positive impact, advises Paul.

"While soils can be remarkably resilient, as we go forward, it'll be critical to do all we can to increase the long-term physical health of our soils. Compaction is a huge issue that is underrated in the UK," he affirms.

Agrii's sustainability and environmental services manager, Amy Hardwick, agrees that recent weather extremes have highlighted where there's good and poor soil structure, and the overall demand for better soil management.

"Crops in healthier, well-structured, higher organic matter soils fared much better in last year's dry spring and summer conditions. In contrast, in seasons where weather conditions are more stable, you don't see the yield swings," she points out.

"Each field and situation is different, and best practice is to sit down with your agronomist and identify those areas where crops aren't yielding or which are simply untenable, for example, in situations where fields regularly waterlog or are a problem when establishing a crop."

Cropping and cultivation practices may have to change to help provide a more resilient and higher revenue stream, she believes. While building organic matter content and revitalising drainage will also help to improve long-term sustainability.

One way to build organic matter is through the use of overwinter cover crops ahead of a spring crop, reminds Amy. However, selecting the most appropriate species and getting it right ahead of the spring crop can be difficult, she suggests.

Water erosion

Around 80-90% of soil loss from UK fields occurs due to run-off from tramlines.

"If you're using the cover crop to root to depth and help to break down any pan or poorly structured zone in the soil, then include deeper and stronger rooted species such as radish or vetch. Alternatively, species such as phacelia with a shallow root architecture are effective in creating a good seedbed ahead of spring establishment."

ROOTING BENEFITS

To improve soil structure, Agrii suggests planting the firm's 'Structurator' mix of winter rye and black oat, with oil radish, linseed and phacelia, which aims to provide a high biomass, and a strong and diverse root system that helps to create a well-structured soil profile.

"If, however, from a soils-perspective, you're looking to minimise erosion risks, then a fast-establishing winter rye/vetch, medium biomass mix that gives full season cover and captures nutrients, may be a better option.

"Those growing maize could look at under-sowing the crop with grass or getting a vigorous overwinter cover established as soon as the crop is cut. Here, an earlier maturing maize variety will help to minimise any soil loss or deterioration risks.

"Best practice is to get the cover crop established as soon as possible and choose species that work well together and do the job you want," points out Amy. "Whatever option, plan well ahead and select a cover crop with a specific aim in mind. ●

Sticking with the earlies

Following a favourable year for maize this past season, might this be enough to tempt growers back to later maturing varieties, despite the risks associated with delayed harvest dates? *CPM* takes a look at some of the options available.

By Janine Adamson

Maize was subjected to drought and an exceptionally early harvest for many UK growers in 2025. However, in the Scottish Borders and south Wales in particular, the optimum combination of adequate soil moisture and warm temperatures proved a perfect scenario, points out Agrii's Ben Lowe.

"This came off the back of another wet autumn in 2024, meaning growers had reached for earlier maturing varieties to ensure a prompt harvest and good entry for the following crop in the rotation," he continues.

"The demand for forage also continues to be high. But, despite an extreme year for maize and the temptation of potential additional yield from later maturing material, we must encourage growers to stick with early varieties."

He adds that on paper, the yield performance of ultra early varieties is often perceived to be low compared with later options, due to the way BSPB descriptive list trials have historically been harvested. "In harvesting at 40% dry matter, this means ultra early varieties are being cut around 3-4 weeks later than convention, and the data reflects that.

"Subsequently, those growers who've taken a leap of faith and opted for an ultra early type have found the crop has exceeded their yield expectations."

SHIFT IN PROTOCOL

Ben explains that the DL is now moving to a three-cut system to accommodate harvesting early, as well as harvesting ultra early varieties at a more appropriate time, although this will take around three years to reflect fully within data. "Therefore regional on-farm trials are critical in supporting the DL during that transition period," he comments.

Looking at some of the options Agrii has been trialling at Field Hall Farm near Uttoxeter in Staffordshire, LG Gema has continued to be reliable, thus leading the way, suggests Ben. "At FAO 150 it's among the first to truly mature, offering 17.3tDM/ha, 107% relative starch yield, and 95% relative ME.

"It delivers an early harvest without paying significant yield penalties – we believe Gema set the stage of a new beginning for ultra early varieties."

According to Ben, Gema has proven to be one of the most popular varieties in the local region (south Staffordshire), but with seed supply limited in 2024, a valid alternative would be KWS

Trialling and testing

While BSPB descriptive list trials transition to a three-cut system, regional on-farm trials will be critical to support decision making, suggests Agrii's Ben Lowe.

Leto (FAO 150). "Leto is arguably the stand-out variety, especially when it's grown in challenging conditions.

"It seems drought tolerant and able to hold itself, perhaps due to its extensive rooting system. It's also an additional 8-10 days earlier to mature, and still achieves nearly 17tDM/ha.

"The only watch-out is that Leto retains its colour well – it'll be greener for longer – which provides a wider harvest window, so it can be deceiving to know when it's actually ready to harvest."

Then, in the 'early' camp, is LG Harmony at FAO 170. Ben believes this is a 'next level' variety based on its high yield, starch and ME levels, in addition to offering an early harvest date. "Harmony has been an exceptional variety for both favourable and less favourable regions.

"If you planted an area of Harmony in addition to Leto, it'd stagger harvest dates and on-farm workloads nicely," he suggests.

Also at FAO 170 is KWS Pasco, which has been a benchmark variety at the trial site in Staffordshire, raises Ben. "We believe this should be a variety which sticks around for a while, after all, growers don't like swapping for no reason."

Finally, among the latest maturing varieties that Ben is recommending to growers in the area is DSV Forttuno (FAO 190) – an early maturing type with proven performance. "This would be ideal for those growing maize rotationally.

"It's smart and robust with smaller spindles, it's a great all-rounder that really suits those growing maize as a cash crop. Forttuno was identified within Agrii trials for its suitability and position within the UK market," concludes Ben.

Making the most of maize for biogas

How two brothers have complemented their thriving renewable energy business by growing maize

Although Willen Biogas in South Hertfordshire has been in operation since 2016, it was the fallout of Covid-19 that made brothers Howard and Adrian Williams turn to maize.

A diversification of Cattlegate Farm, the business is centred around an anaerobic digestion unit located 15 miles north of Piccadilly Circus, producing enough energy to power around 3500 houses each year.

Pre-Covid-19 it was easy to source ample AD feedstock from retailer and end-user food waste, explains Adrian. However, during lockdown, many restaurants and catering businesses closed or scaled down, and suddenly feeding the plant became a problem.

"This is when we introduced energy crops into the farm's rotation, maize and rye, which both process well through the plant," adds Adrian. "Although food waste has picked up again now, the energy crops are complementary and remove the sensitivity of daily production. There's also the added benefit that they help to stabilise the bacteria and bugs in the AD plant."

Delivering on biogas yield
DKC2742 is a variety that offers compact, starchy cobs with high dry matter yields and optimum biogas production once processed.

Currently, the plant operates at around 90% food waste and 10% energy crops, although maize is here to stay, says Howard. "As a break crop it's helped to replace oilseed rape in the rotation, as part of our approach to risk management.

"We not only feed our own AD plant with maize and rye, but we also supply other renewable energy businesses as well as livestock farmers looking for forage. Energy crops seem to fit well into the farm, plus they facilitate establishing cover crops for added soil health benefits," he highlights.

Critically, Cattlegate Farm's 900ha is spread across two contrasting sites with varying soil types – heavy London clay through to gravel. This means paying particular attention to variety selection, points out Howard. Working with specialists from ProCam, he's been exploring the most appropriate maize varieties to grow for not only the farm's soil types, but to maximise biogas production.

"On our heavier soils we're looking for FAO 150-160 varieties to enable wheat to be planted once the maize has been harvested. Then on our lighter land, we can push to later types around FAO 200," he comments.

According to seed specialist Hayley Wellings, once the correct maturity has been identified, the focus should be on optimum dry matter and energy yields. "When you're selecting for biogas yield, unlike forage, cell wall digestibility and starch levels are less important.

A powerful solution
Howard (L) and Adrian Williams (R) started growing energy crops to feed their AD plant when the local supply of food waste dwindled during Covid-19.

"A variety we've been trialling at Cattlegate Farm is Bayer's DKC2742 which really seems to be the leading choice for biogas, delivering more energy per hectare. At FAO 190 it is in the maincrop maturity bracket which is important to ensure the following crop can be planted in time," she says.

With a full suite of agronomic traits working in its favour, among DKC2742's key characteristics is its establishment speed, highlights Bayer's Richard Williams. "It's very vigorous and tends to rocket out of the ground across all sites, whether that's early or late drilled.

"Once established, it develops large, flat green leaves meaning more light interception and photosynthetic activity, while also offering better weed suppression under the canopy. This translates to compact, starchy cobs with high dry matter yields and optimum biogas production once processed."

The variety also boasts strong resistance to root lodging and brackling, as well as robust eyespot and fusarium resistance, concludes Richard.

Technology and data scrutiny can drive improved profitability

Balancing the economics in arable farming can prove challenging, but Ceres Research's agristrategy conference provided some pointers on what to focus on to help drive improved returns. *CPM* reports from the event.

By Mike Abram

A downward slide in commodity prices plus poor yields during the past couple of seasons are contributing to a difficult economic outlook for arable farmers, particularly following the removal of the Basic Payment Scheme (BPS) and continued uncertainty regarding the future of key environmental funding options.

But while arable farmers have been forecast to face the 'bumpiest ride' of any agricultural sector, there have been opportunities, if growers focused on what they could influence in the future, rather than worrying about the past – a message suggested by Charlie Ireland, during the inaugural Ceres Research agristrategy conference.

"In the middle of difficulty, lies opportunity," he continued. "But realising there is opportunity is the first port of call."

He was especially optimistic about the role of technology, suggesting agri-tech was going to be the biggest revolution in agriculture (see box). "We have to embrace the technology that's coming in a way that we haven't previously."

In particular, he said insight and information would be critical, as the risks of getting it wrong are costly. However, farmers using open platforms powered by artificial intelligence tools to help analyse the data available from their businesses could boost productivity or reduce costs, along with the use of robotics and other new technologies, added Charlie.

Ceres Research – which operates alongside consultancy and farm advisory arm Ceres Rural, and Ceres Property that covers land consultancy, planning and development – provides industry intelligence and analysis, research and development, and technical training events, pointed out Tim Isaac.

"We launched Ceres Research in 2024 to bridge the gap between innovation and on-farm adoption. We feel there's a lot of data that doesn't pass the 'so what' test, and a lot of agri-tech that doesn't get onto farm commercially.

"Addressing that issue is the key to driving the industry forward. Our aim is to provide easily accessible data and insights from our team of analysts."

Presenting data from Harvest 2025, Ceres Research's Dr Alex Setchfield revealed that perhaps counter to expectation, medium light land held yield better than other soil types in a difficult season, according to

Revolutionising agriculture
Charlie Ireland was especially optimistic about the role of technology during Ceres Research's agristrategy conference.

A challenging season

Ceres Research's Dr Alex Setchfield revealed that Harvest 2025 data suggests medium-light land held yield better than other soil types.

analysis of wheat yields from 181 farms benchmarked by the firm. In fact, yields on that soil type were only 5.6% lower than the five-year mean, compared with 10% lower across all soil types.

"In seasons of low rainfall, you'd expect heavier soils that retain moisture would do better," he said. "But a wet September led to delayed drilling into poor seedbeds, while compaction restricted rooting. On heavy soils, that was compounded by surface capping as the ground dried rapidly into the spring, limiting the penetration of water deeper into soils.

"That meant a shallow root system, limited access to deeper moisture, and more rapid onset of drought stress, which might be why we saw greater yield reductions in heavier soils. Conversely, because medium-light soils have a more open structure, they drained and avoided waterlogging and compaction issues a little better, which led to stronger establishment," explained Alex.

With reduced soil capping, water could infiltrate more and roots dug deeper to access nitrogen and moisture, potentially explaining the greater yield tolerance, he said.

Another finding from the analysis was a positive correlation between the number of break crops in the rotation with both first and second winter wheat yields. Digging into the data further suggests first wheat yields are highest following oilseed rape, said Ceres Rural's Jock Willmott. "That surprises me, so there's a win in having a quantity of OSR in the rotation."

Consequently, that's one potential solution he believes can mitigate some of the current financial pressures, along with building complementary rotations and improving soil health.

He also challenged mindsets that concentrate solely on reducing costs rather than also improving productivity, arguing that fixating on stagnant UK average wheat yields can foster a negative attitude and create a narrative of set-yield outcomes that focus on reducing spend.

In reality, there's significant potential for yield improvements, with data indicating almost a doubling in average yield between the highest and lowest performing farms every year in every crop, he commented.

Comparing the financial impact of aiming for small yield uplifts (0.25t/ha) versus cost savings of £30/ha (see table), he highlighted that there's more to gain from yield improvements. "Saving £30/ha on a wheat crop, which should be achievable, improves margins by 13%, whereas improving yield by 0.25t/ha increases it by nearly 20%.

"If we drive output and save, it's nearly 30% improvement. It still doesn't make wheat super profitable, but there's a lot of this we can achieve in-house through better conversations and closer relationships with the people we work with, without waiting for new technology to help us," he argued.

For higher price crops such OSR, percentage gains can be even greater, which could be used to help prioritise where to deploy resources, added Jock.

He then said he forecasts a reduction in wheat intensification, rather than a return to wheat-wheat-OSR style approaches, with a maximum of two wheat crops in a five-year rotation, or even just one when there are difficult grassweeds to contend with.

Ultimately, the crucial factor to consider when building profitable rotations is that crops should be complementary, rather than building around one very profitable crop to the detriment of all others in the rotation, stressed Jock.

Equally, he suggested that despite challenges in management, introducing livestock into arable rotations is beneficial. "This year, land that had muck or a history of it, generally didn't fall off a cliff; organic matter helps to buffer drought, holds onto more water and makes land work easier," he noted.

Building soil organic matter levels through the use of livestock or cropping at a sustainable cost is one of two metrics Jock suggested as a proxy for whether a rotation is successful during a 5-10 year period.

The other is being able to drill cereals 10-14 days earlier, as data suggests those crops yield better and are more resilient to the impact of climate change, he said. ▶

	First wheat (feed)	Second wheat (milling)	Winter feed barley	OSR	Winter beans
Yield (£/ha)	8.4	8.1	7.4	3.2	3.2
Variable costs (£/ha)	650	720	550	540	300
Fixed costs (£/ha)	550	550	550	550	550
Cost/t (£/t)	143	157	149	341	266
Price/t (Nov 2026)	170	190	150	430	230
'Margin' per 50ha of crop	11,400	13,450	500	14,300	-5,700
Budget	11,400	13,450	500	14,300	-5,700
Save £30/ha in variable costs (% increase)	12,900 (13%)	14,950 (11%)	2,000 (x3)	15,800 (10%)	-4,200 (26%)
Increase yield by 0.25t/ha (% increase)	13,525 (19%)	15,825 (18%)	2,375 (x3)	19,675 (38%)	17,325 (50%)
Both (% increase)	15,025 (32%)	17,325 (29%)	3,875 (x6)	21,175 (48%)	-1,325 (77%)

Source: Ceres Rural

Later in the conference, Ceres Rural's George Badger highlighted that AHDB analysis suggests a £165/t wheat price is only worth around £119/t when inflation is factored in. "That explains why things feel so tight right now," he commented.

The analysis also shows that wheat variable costs approaching £600/ha in the UK are much higher than in other countries – more than double those in Australia, Argentina and Ukraine, and £100-180/ha more than in European countries like Germany, Denmark and France.

Using data from Ceres Research's benchmarked farms and ADAS's Yield Enhancement Network, George said there's no strong correlation between higher spending on inputs and achieving higher yields, suggesting that increased spending isn't a guaranteed pathway to profitability.

He argued that more important is skilled crop management, particularly tailoring applications to seasonal conditions and crop potential. He pointed out that the source of advice can create significant differences in costs for a similar yield outcomes, suggesting that growers should evaluate whether using pre-mixed co-formulations is always necessary when in some circumstances it's possible to mix alternative off-patent products. "You lose the convenience of one can and perhaps a better formulation, but there are considerable savings – as high as 60% – if you buy products individually, because of generic competition," he said.

Perhaps controversially, he also questioned whether in some cases multiple actives were even required. "An analogy would be that you have a headache, do you need to take both paracetamol and ibuprofen, or would one do the job?"

More farmers and sprayer operators are undertaking BASIS training which could help to make challenging input use easier, he noted.

George also highlighted that higher yielding crops can have lower greenhouse gas emissions intensity, possible through, for example, the use of organic manures rather than bagged nitrogen.

"These calculations aren't usually done by many farms voluntarily," he said. "Where they are being calculated, usually because a customer is asking for it, this is opening up potential extra revenues by monetising reductions."

Both George and environmental schemes advisor Chloe Timberlake pointed to emerging opportunities for additional income through accessing supply chain premiums or payments for carbon reductions, biodiversity improvements, and implementing new practices.

"These aren't widely available, and are geographically constrained," admitted Chloe. "But keep an eye on them because I see this element of funding increasing in the coming months and years."

Technology reaches pivotal moment

Technology in farming is moving beyond simple automation, suggests Waldersey Farms' Mark Hall

The agricultural industry is migrating to a point where technology can be leveraged to help farms stay competitive and profitable, suggested Mark Hall, managing director of the 8000ha Waldersey Farms in Cambridgeshire.

But to take advantage, it's crucial to have a strategy for its use, he stressed. "It's not just about buying a new piece of kit which is a little more advanced; it's having a clear strategic aim for that technology."

He explained that at Waldersey Farms, technology is being used to drive decisions that further the business' key objectives: reducing costs of production, reducing its carbon footprint, and improving the health, safety, and welfare of its employees.

"Everybody who applies a product to a field has an iPad, while for our lone worker policy, everybody has an iPhone and an Apple Watch. We can tell where they are and send data to them.

"We've also reduced our administrative burden by 30% in the office, by sending tasks out through Omnia and getting data back in real time as they complete tasks in the field."

Making fuller use of the computing power within John Deere machinery is also driving improvements, added Mark. On average, farmers are only using around 65% of the data capabilities of their machinery, he said.

Conversely, Waldersey Farms is pushing to do more, including using a digitised system for variable rate seeding that allows both precision farming and data integration between Omnia and John Deere Operations.

A new John Deere X9 combine fitted with ground speed automation has outperformed the best human operators by 15% in capacity output, he added. "That level of automation is driving value for us."

The business is particularly focused on making informed decisions about growing crops, using both more precision and predictive agronomy, pointed out Mark. "It's about making sure every pound we spend is spent better every year to unlock more value."

He shared that he believes the key to unlocking genuine improvements through predictive agronomy is integrating multiple datasets and the use of artificial intelligence (AI) tools to draw out new insights.

"It'd be an iterative process consolidating weather, agronomic, machine, soil data and satellite imagery into something that'd provide the capability to analyse businesses on a new level," he suggested.

One example Mark suggested is combining soil data, yield and protein trends, satellite imagery and climatic data to improve nitrogen use efficiency, he said, while he also sees AI enabling supply chain optimisation, and providing the analytics to quantify and monetise environmental benefits, such as carbon footprint reductions.

A progressive business

Waldersey Farms is focused on making informed decisions about growing crops, using both more precision and predictive agronomy, pointed out managing director, Mark Hall.

Collaborating for a sustainable future

Bringing different elements of the supply chain together to drive sustainability and reward growers for their efforts is starting to gain traction, with pilot initiatives designed to achieve a new level of co-operation from food to fork. *CPM* takes a closer look.

By Rob Jones

The loss of traditional subsidies, uncertainty over the future of SFI and ongoing volatility across virtually all agricultural markets, is forcing growers and the wider food industry to redefine their working relationships, suggests Agrii's Amy Hardwick.

The traditional trading framework where each step of the food production journey exists in separate silos of operation has to move to wider cross-sector collaboration, if sustainability objectives and a secure future for growers is to be achieved, she continues.

"This is a time of enormous change in our industry," comments Amy. "True sustainability isn't just about the environment, it's about ensuring food security and building a resilient farming sector for the future, too.

"With the type of transition growers are facing through the loss of BPS and SFI, plus ongoing fluctuations in grain prices and input costs, there's a responsibility for all in the industry to be creative and look at ways farm income streams can be buffered.

"We all understand why we have to improve soil health and be more sustainable, but the big question is how we can do this financially and make everything stack up from an economic point of view?"

While nobody has all the answers on how to achieve this long-term, Agrii is already exploring new ways of encouraging sustainable practices and offering a reward for growers starting on the journey, explains Amy.

"Regenerative farming is great but it doesn't work for everyone, so we're ▶

looking at programmes that embrace some of these principles while helping our producers fund the transition to more sustainable farming.

"Fundamentally, we want to incentivise the grower to implement sound and sustainable practices, educate them as to benefits they will receive in the long-term, such as improved soil health, and reward them for doing so in the short-term.

"It's not just altruism. Long-term viability is really important so we want to help farmers to become more sustainable, to make sure they're there for the next generation, and also to ensure we can develop our offer for the future."

The first such programme to be rolled out is based on a two-tier system with farmers able to receive payments of up to £100/ha depending on the number of sustainable practices they carry out on-farm, explains Amy.

"There's a first tier consisting of a guaranteed payment for carrying out basic practices like an integrated pest management plan, use of cover crops, having a wide crop rotation and having an environmental base line analysis carried out.

"We've partnered with the Soil Association Exchange to provide this environmental starting point and it's based on current policies and practices around biodiversity, carbon, soil health and other environmental metrics.

"After that, farmers can add supplementary practices into the mix. We've kept these optional because we recognise that what is sustainable to one farmer might not be sustainable for another. However, the aim is to help incentivise continuous improvement and provide a reason for farmers to keep developing their sustainability practices and take on more as their own journey develops, while receiving greater rewards."

These supplementary practices are based around the three main environmental pillars of carbon, soil and biodiversity, she points out.

"So, for example, using a more diverse cover crop option or adopting a larger number of crop nutritional efficiency practices, such as using an inhibitor, all can lead to greater rewards depending on what is adopted.

"It's calculated on a points-based system, so the more they do, the more points they earn, with a cap of £100.

"Run through Agrii's seed business GB Seeds, the initiative is currently focused on oats and barley with linseed being looked at for the future, but we also see the opportunity to extend such schemes across the rotation through other strategic partnerships."

One such pilot project now up and running is 'The Beloved Soil Initiative' run with renowned pet food manufacturer, James Wellbeloved, part of the Mars Incorporated brand.

Focused on three of the company's farmer suppliers of oats and barley, the scheme is based on the Agrii and Soil Association Exchange two-tier system detailed above. It's an approach that aligns perfectly with the firm's values and sustainability objectives, suggests James Wellbeloved's Ed Owen.

"James Wellbeloved is part of Mars Pet Care, a global business that touches the lives of half a billion pets every year, which means we have the responsibility and opportunity to really shape the way in which the industry is seen.

"Mars itself is a family owned business which provides us with the ability to take a broad and truly long-term view. Sustainability is embedded in the company's core principles, and since 2015, we've reduced our overall greenhouse gas emissions by around 16% while growing the business by more than 60%."

Wholesale changes

According to Tom Eaton, Bunge believes that greater sustainability and traceability should be developed at pace across the grain supply chain.

Beyond the box

Given the current industry pressures, Agrii's Amy Hardwick says there's a responsibility for all in the sector to be creative and look at ways farm income streams can be buffered.

Ed says they're focused on practical ways to support sustainability. "This means looking at the design of our packaging to understand how we can both reduce it and make it easier to recycle.

"But, it's also about how we partner throughout our supply chain to transition to more sustainable methods, and that's where the work on regenerative agriculture and the Beloved Soil Initiative comes in."

> ***"Our aim is to invest in long-term partnerships with the farmers by supporting them, providing education and incentivising them."***

According to Zsoka Ardai, regional sustainable sourcing lead for Mars Pet Nutrition Europe, the company's sustainable regeneration plan was established in 2017 with a focus on addressing the critical environmental issues where a difference could be made.

"Moving towards suppliers with the right approach to sustainable agriculture is very important to us, but we're also looking at the carbon footprint of all suppliers, as well as human rights issues in the future.

"Our aim is to invest in long-term partnerships with the farmers by supporting them, providing education

and incentivising them. So, under 'The Beloved Soil initiative', Agrii is responsible for managing the relationship with farmers, assigning advisors and ensuring we're meeting the programme criteria and delivering premiums that reward hard work."

Zsoka adds that the Soil Association Exchange independently verifies the programme, offering farmers access to tools and resources to support with their regenerative agriculture transition, and measure and monitor the programme's success.

"Farmers are definitely getting more engaged in the process, but it's a long-term commitment from both sides. It's early days, but we believe we're helping bring to life the urgent need to help support farmers to protect soil for future generations," she says.

Summer 2025 also saw the first wheat harvested as part of another new initiative from Agrii, Bunge and Whitworth Bros, designed to drive greater sustainability through the wheat supply chain and reward growers for positive environmental actions.

Set to run for three years, the scheme aims to benefit farmers, supply chain partners and consumers through food products with a reduced carbon footprint and full traceability, explains Amy.

"We accept that what's sustainable for one grower might not be by another, so we've produced a set of minimum requirements as a starting point for all those taking part in the scheme that will provide a fixed level of financial support.

"There's then a set of options that participants can decide to implement on their farm if they're suitable for them, or if they have the infrastructure to do such as. For example, cover cropping, minimising soil disturbance and more efficient nutrition practices.

"As with the Beloved Soil Initiative, the greater the number of actions and points, the more additional income achieved, with £100/ha possible across the scheme."

Amy says fundamentally, the aim is to help growers implement such practices in a cost-effective way, while supporting environmental improvement and also maintaining enterprise profitability.

"With the regard to the supply chain, the idea is to help reduce the carbon footprint of the ingredients we're supplying into manufacturing plus improve the quality of products and their traceability for consumers."

According to Tom Eaton of Bunge, their interest in the scheme stems from the company's belief that greater sustainability and traceability should be developed at pace across the grain supply chain.

"It's a discussion point with producers and consumers alike, so it's a positive move forward to be able to reward growers already investing in these sustainable practices on-farm and encourage them to continue their journey.

"In the current volatile pricing environment – where we're often seeing wheat prices barely covering the cost of production – it also offers some financial reward for farmers in the short-term and encourages them to think more about their actions in the long-term."

By working with Agrii and Whitworths, Tom says Bunge has tried to take a practical yet flexible approach, to ensure farmers are rewarded for the 'right' practices.

PR statement

This dog, Ellie, represents the soil lost every second around the world and was created as part of James Wellbeloved's Beloved Soil Initiative.

Securing a future

Whitworth Bros believes the industry requires long-term commitment and investment to embed sustainabiltiy across all practices.

"As a key player in the market and a global commodity trading merchant handling the supply chain from farmgate to consumer, we've also given a commitment to our growers in the programme that we will always be market competitive," he raises.

William Butler of family-owned Whitworths Bros – the UK's largest flour milling business – says the industry requires long-term commitment and investment to embed sustainability across all of its practices, with the scheme being a great starting point.

"Technology, infrastructure and equipment are all important, but we also have to invest in the supply chain to make sure we have suppliers in the future and high quality, environmentally-sustainable produce.

"To ensure our business stays viable for generations to come, we require a sustainable and resilient supply chain and that goes all the way back to farmers and growers. Taking part in the scheme with Agrii and Bunge is the starting point of an investment back into primary production for us that'll help to make sure our supply chain will be there in two, three, four generations' time."

William says that's one reason for the company's commitment, but there's also the drive to support lower carbon footprint wheat and regenerative farming, together with the ethical side of enabling healthy change and looking after soil health for the future.

"We're approaching it from two directions – one from our customers' perspective, and the other for our business' desire for a sustainable viable future. The vast majority of the wheat that we mill is UK grown and we want it to stay that way," he concludes.

Powering up agricultural autonomy

> *"How big is our imagination? That's the question when it comes to autonomy in farming."*
>
> MIKE TAYLOR

A group of physicists and engineers are striving to unlock the untapped potential of autonomy in agriculture by providing the final piece of the technological jigsaw puzzle – a consistent source of energy. *CPM* investigates the concept of megahertz inductive power.

By Janine Adamson

According to Mike Taylor, solving the problem of wirelessly charging agricultural robots all lies in the application of general physics. However, despite having a solution ready to go, he's waiting for the industry to catch up and pay attention.

"We've spent 10 years developing a product and now simply need it to land," he says. "But this isn't about promoting me or the company, it's about agriculture adopting the technology. After all, how big is our imagination? That's the question when it comes to autonomy in farming."

And, as a former research physicist for the Ministry of Defence with a PhD in plasma physics, it could be argued that Mike is well placed to comment on the subject.

With a self-confessed passion for 'taking scientific concepts and making them work in unusual applications', this is how his company – Inductive Power Projection – began. Specifically, exploring how megahertz (MHz) magnetic power transfer could solve some of agriculture's most challenging conundrums.

"If you take an induction hob or heater, most of these scenarios work at a kilohertz-frequency level. However, if rather than metal you want to heat unusual material, for example, slugs, then we have to take it up a gear to MHz. Here it's possible to kill a pest without causing damage to the growing crop," he explains.

Having secured several rounds of Innovate UK funding to investigate the slug control concept further, Mike comments in that instance, commercialisation was too difficult. This led him to investigate applying his idea to the world of humane livestock stunning.

Again, this proved too tricky to scale up, he says. It was then that Mike and his close peers had

New realms of possibility

According to Mike Taylor, in utilising MHz, it's possible to achieve 99% transfer efficiency between a transmitter and receiver across far larger distances and lateral displacements.

Home-grown production
All of Inductive Power Projection's manufacturing takes place in the UK using a trusted team of specialist scientists and engineers.

How inductive power, or megahertz magnetic power transfer, works

In this application scenario, an alternating current flows through the transmitter coil, which creates a time-varying magnetic field.

This then extends to a receiver coil placed in close proximity. According to Faraday's Law of Induction, the changing magnetic field induces a voltage and then an alternating current in the receiver coil.

The current in the receiver coil, once rectified, can then be used to charge a battery or power a device.

a lightbulb moment – the true opportunity lay in wireless battery charging for agricultural autonomy, specifically, robots and drones.

"If you take away the unpredictable nature element that comes with animals or pests, we can control the whole system, making it easier to engineer and develop a valid solution," says Mike.

He adds that for decades, wireless power developers have been attempting to progress the technology with frequencies of a few tens of kilohertz, despite mathematics indicating this is just too low for efficient power projection. "If we're honest, the performance of wireless phone chargers isn't very good and of course, they're based on the same underlying technology for heating metal."

Conversely, by taking a physics-led approach, it's soon apparent that the key is to operate at MHz. In utilising MHz, it's possible to achieve 99% transfer efficiency between a transmitter and receiver across far larger distances and lateral displacements, compared with when working in the kilohertz range, explains Mike.

"Critically, we don't require expensive ferrite cores vulnerable to overheating, our contactless system is air-cored and uses single-turn thin-walled copper tubes, similar to that of household plumbing. We create a transmitter of any shape – depending on the machine requiring charge – and a receiver. That's ultimately all it takes."

In terms of numbers, the system can currently power up to 2kW through a single lightweight receiver, with a roadmap currently laid out towards 50kW or more. Charging can also take place over distances of up to 1m.

Importantly, the solution is accessible to the farmer in the field because it's now affordable, he stresses. "In terms of the exact use cases, we could be looking at autonomous vehicles such as inter-row weeders, or remotely-operated drones that are being used as a security measure. The direction of travel for robotics is undoubtedly autonomy, and that's where we come in. Wherever there's a requirement for autonomous power, we can provide it," he says.

Taking a pragmatic view, Mike points out that there are alternatives to wireless charging, although none of these are without fault. "Plug-in is the obvious, and that's great if you have personnel to plug it in or work in a very clean, dry environment. However, our system is terminal-free, working in both mud and water, even underground.

"Lasers and microwaves have also been shown to work, but these are inefficient, although the only options for far-field. For near-field within about a metre, then inductive, as in our solution, is clearly the way to go. We just require brave individuals – farmers or agronomists – to adopt the technology and fully embrace autonomy."

As well as newly purchased pieces of kit, Mike's solution can also be retrofitted to existing machines. With all of the manufacturing taking place in the UK using a trusted team of specialist scientists and engineers, he says it's a little disappointing that so far, interest has only come from further afield such as Dubai.

"We'd love to identify some UK trial farms to test run our technology. You don't necessarily have to own a drone or robot either, as we have partner companies who we work with in those spaces. You just have to be forward-thinking and open-minded," he urges. "There's even the possibility to charge robot-to-robot; we can take energy to wherever on the farm it's required."

Mike believes solving the problem of autonomous power is the last primary technological barrier to the growth of autonomy. "There are four legs to the autonomous chair – the vehicle or robot; the navigation system; data acquisition through sensors; and the final one – power.

"While problem solving is forever, getting that final leg correct is pretty important when it comes to adopting autonomy in agriculture, for not only productivity gains, but sustainability benefits too," he concludes. ●

A perfect synergy
The team behind Inductive Power Projection saw that opportunity lay in wireless battery charging for agricultural autonomy, specifically robots and drones.

Application of physics
The firm's solution has been 10 years in the making.

Nature NATTERS

WITH MARTIN LINES

Risk and reward

I'm beginning to think it's time to rethink which crops we are trialling, and the varieties on the AHDB Recommended Lists.

For the past 20 or more years, industry trials have focused on yield as the primary measure of success. To achieve these yields, current varieties require full input and agronomy systems.

When we look at the latest RL, however, it includes varieties that have concerning weaknesses to disease. Weaknesses that require a full fungicide programme – in a good year. What happens when the weather doesn't play ball? Disease pressure is high, but you struggle to get the applications on? All the risk appears to be carried by the farmer.

With our changing climate and unpredictable growing seasons, yield and quality are becoming increasingly unreliable. In the past, the weather was more predictable and we always had the area-based payment supporting the system in a bad year. Making lots of payments to the supply chain for their inputs before yield and quality are known seems to me increasingly difficult to justify.

When we look at European crop trials and recommendations over the past 20 or more years, they've focused more on resilience to diseases and low-input systems, not just yield. Achieving really good averages with fewer inputs and better margins surely provides more security for farmers than pushing hard for yields with high inputs in an erratic climate. The bad years that make a loss do more damage than the few, highly profitable years, help us.

Globally, we have an excess of grain and not enough demand for it. All we as farmers can do, is wait, hoping for some kind of problem in the supply chain or production somewhere else in the world that'll lift commodity markets. But, I don't see this coming any time soon.

It's good to see AHDB increasing their trials on low-input systems and looking at profitability as a whole, rather than just the highest yields. I'm not saying yield isn't important, but it all comes back to that risk, and getting poor returns for our investments, while all those in the supply chain can rely on predictable payments for the goods they've sold to farmers.

> *"How can risk be shared more equitably across the whole supply chain, from crop inputs right through to the consumer enjoying our produce?"*

How can this risk be shared more equitably across the whole supply chain, from crop inputs right through to the consumer enjoying our produce? The way prices currently are, no sensible investor would be committing large sums of money for such poor returns and with such risks.

I was pleased to see Baroness Batter's profitability report that was released before Christmas – it has many good things in it. I really welcome her focus on farm clusters for investment and knowledge exchange, but also the value she puts on nature and natural capital, and the demand for stewardship of these assets to be better rewarded by the market.

I'm becoming increasingly concerned that we're moving towards a model in which a small number of highly productive agro-businesses are directly linked to the supply chain, producing what the market requires with only a small number of contracts. This leaves the vast majority of farmers across the country with a more restricted market, and the profitability of smaller farms becomes increasingly difficult.

I believe that, on the contrary, many working together to deliver outcomes that the supply chain or the market demands has to be a more positive, equitable and sustainable way forward.

Defra will be making several announcements around the Sustainable Farming Incentive, Land Use Framework, the Food Strategy and the 25-Year Roadmap for a profitable farming sector during the next few months. I'm hoping these might help inform the industry regarding what's required and where it should be produced in the years ahead.

But, unless we trade on a level playing field with imported produce, and farm with fewer costly inputs, we're farming with our hands tied behind our backs. ●

When we look at European crop trials and recommendations over the past 20 or more years, they've focused more on resilience to diseases and low-input systems, not just yield.

YOUR CORRESPONDENT

Martin Lines is an arable farmer and contractor in South Cambridgeshire with more than 500ha of arable land in his care. His special interest is in farm conservation management and demonstrating that farmers can profitably produce food in harmony with nature and the environment. He's also chair of the Nature Friendly Farming Network UK.
@LinesMartin
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Ecological engineers

A new study has found that beaver-created wetlands are home to more pollinators than human-created equivalents, and as work continues to boost beaver populations, landowners are being urged to embrace the semiaquatic rodent. *CPM* finds out more.

By Janine Adamson

Hunted to extinction centuries ago, the Eurasian beaver is slowly being reintroduced across Scotland, England and Wales in a bid to reap the unique ecosystem benefits that this curious water-dwelling species can generate.

By coppicing trees, damming small watercourses, and digging 'canal' systems, beavers can sculpt landscapes that benefit both wildlife and people. And now, academic research has quantified this further – providing data that shows beaver-created wetlands not only provide a home for other wildlife, but they're more successful at it than humans, too.

The work, conducted by researchers at the University of Stirling, compared pollinators found around wetlands made by beavers with those located around human-created ponds. This was carried out by counting species, as well as individuals of bees, butterflies, hoverflies and day-flying moths.

The researchers also recorded interactions between these groups and flowers, with the pollinator surveys repeated six times from May-August at Bamff Wildland, a rewilding estate in Perthshire, and two neighbouring private farms.

Study lead, Patrick Cook, is a researcher at the University of Stirling and a senior ecologist at Butterfly Conservation. He says simply put, beaver wetlands support more pollinators.

"The beaver-created areas showed a 29% increase in hoverfly species, 119% more hoverfly individuals, and 45% more butterflies than those that were artificially created," he explains.

"In reality, the two are completely different environments. If you compare directly, beaver wetlands are very dynamic with different vegetative diversity, often retaining more water. However, unlike man-made ponds, they've not been supported through agri-environment schemes."

And it's this point that instigated the research in the first place, points out Patrick. "As beavers are legally reintroduced, they'll naturally inhabit new areas including farmland. But, there's no financial incentive to have beaver wetlands on farms, leaving them at risk.

"Following this research, we're arguing that if we want beaver wetlands on farmland, and to benefit from the ecosystem services that they provide, then farmers should be supported and financially rewarded accordingly," states Patrick. ▶

Financial reward

Researcher Patrick Cook is arguing that to benefit from the ecosystem services that beavers provide, farmers should be supported and financially rewarded accordingly.

Taking a pragmatic stance, he acknowledges there could be negative connotations associated with beavers and subsequent conservation efforts. "We expect there to be a level of conflict as they're re-introduced, this is why we want to support farmers through improved knowledge transfer so they can fully embrace beavers as a species."

Emily Bowen of Beaver Trust agrees that raising awareness ahead of their return is critical in achieving landowner buy-in. "Beavers are fantastic ecological engineers with the ability to dramatically transform landscapes. However, the impact they have is often site-specific – they don't always create a dam if water is already available to make them feel safe from predation," she says.

"The main fear is that beavers flood farmland. While they can cause changes and raise water levels, these are risks that can usually be managed, and tend to be in already vulnerable areas. Equally, a study of beaver impact on woodland in Scotland found that the majority of beaver foraging occurs within 10-20m of freshwater."

Emily adds that the Beaver Trust proactively works with landowners to help mitigate risks, and in worst case scenarios, can track and relocate beavers to alternative sites. "This is the last resort though, because in reality, another beaver could move straight into that habitat.

"Instead, the aim should be to create a balance between growers and beavers, enabling both to live together and co-exist comfortably."

Patrick points out that while they're exclusively herbaceous animals with a varied diet, beavers don't consume all trees and plants. "In the winter they'll graze on the likes of aspen, birch and willow, which can all re-grow. Then in the summer, depending on location, they forage for herbaceous grasses and flower species.

Beaver-created wetland

Beavers coppice trees, dam small watercourses and dig 'canal' systems to sculpt landscapes.

Co-habitation

The aim should be to create a balance between growers and beavers, enabling both to live together and co-exist comfortably, says Beaver Trust's Emily Bowen.

"Specific trees with ornamental or sentimental value can be protected from beaver damage using strong chicken wire, or by applying a specific painted grit."

While there have been instances of beavers eating crops, this tends to be in localised areas near to the water's edge, he adds. "It isn't that common and can be mitigated by creating a buffer around the beaver wetland."

Beaver Trust wants growers to focus on the wider benefits that beavers can deliver that scope beyond boosting pollinator numbers and greater foliage diversity. "Research indicates that beaver dams can improve water quality by reducing pesticide run-off and slowing pollutants from moving downstream," says Emily.

Patrick adds: "As per last year's drought conditions, having water-retaining wetlands, such as those made by beavers, is becoming increasingly important. But to gain the benefits, landowners have to allow these habitats to flourish.

"Beavers are cool, intriguing and impressive animals; you have to respect what they can create given their small size. And, they do it all for free."

When Tom Bowser was initially approached to actively 'rehome' beavers at his farm Argaty in central Scotland, he says he couldn't say no. The first private landowner in Scotland to legally release beavers back into the wild, Tom has now rehomed 20 beavers to-date.

"Being an upland farm we knew it was very low risk, but in honesty, they've caused next to no issues yet have brought a wealth of benefits," he says.

Prior to the arrival of the beavers, Tom raises that flooding was a problem. "But now, water has to work a lot harder to escape the land. In fact, we've had just one flood since the introduction of the beavers, which was into the farmyard.

"They're really saving us, and helping us financially too. We now offer beaver watching tours and wetland walks; they've become a valuable part of our eco-tourism business," he explains.

In terms of next steps, Patrick and his colleagues at the University of Stirling hope to continue their research, using their findings to lobby Scottish government and drive change. In terms of wider conservation efforts, the Beaver Trust is a founding member of the Riverscapes Partnership, alongside the Rivers Trust, National Trust and Woodland Trust.

Together, the coalition launched the 'making space for water' campaign – a call on Westminster to support a connected network of nature-rich, multi-functional river corridors across England. ●

Beaver status in Britain

BEAVERS IN SCOTLAND

Have been released into the wild since 2009 with a current population of more than 2000 individuals.

BEAVERS IN ENGLAND

Officially recognised as a native species in 2022, with the UK government announcing in February 2025 that they could be released into the wild in England.

BEAVERS IN WALES

The Welsh government announced in October 2025 that European Protected Species status had been extended to beavers.

It's understood that beavers have never lived in Ireland.

Birmingham ablaze for the biggest LAMMA yet

> *"Does the industry need to be less Anglo-Saxon in its instinct to own everything?"*
>
> WILL FOYLE

With over 800 stands and more than 45,000 visitors, this year's LAMMA event has been hailed as the biggest yet. But what had visitors talking in the halls of the NEC? *CPM* was there to report back...

By Charlotte Cunningham

From the moment the doors opened, it was clear LAMMA 2026 was operating on a different scale.

The familiar walk between halls at the NEC stretched further than usual, footfall was heavier throughout the two days, and the show floor felt consistently busy. Co-located with CropTec and the Low Carbon Agriculture Show, LAMMA spread across more than 12 halls, making it the largest event the show has staged in physical terms.

More than 800 exhibitors were on site, and visitor numbers surpassed 45,000, reflecting both the breadth of the combined shows and the continued draw of a winter machinery event rooted in practical farming.

With major machinery launches, technology updates and a full seminar programme running in parallel, the expanded format created a show that was as much about discussion and decision-making as it was about new kit.

But while walking the halls at LAMMA, surrounded by millions of pounds' worth of shiny new kit, it can feel almost heretical to talk about restraint. Yet if there was one message cutting through the noise at a booming event, it was this: discipline, not desire, will define the most resilient farm businesses during the next cycle.

Understanding fixed costs

When looking at potential machinery budgets, Hutchinsons' Will Foyle said having a concrete understanding of fixed costs is vital.

A seminar session on fixed costs and machinery policy brought together Matt Ryan of Oxbury Bank, Matt Redman, chair of the NAAC, and Will Foyle of Hutchinsons' farm business consultancy team to delve deeper into the fundamentals of spending. Between them, they painted a clear picture of an industry operating in mixed conditions – strong in some sectors, subdued in others – but united by one challenge – rising costs that refuse to flex when output or prices fall.

Matt Ryan set the scene from a lender's perspective. Across Oxbury's 10,000-plus farming customers, there are few signs of distress, but plenty of variability, he said. "Farming is cyclical and it's governed by forces largely outside our control.

"What we're seeing is a fairly mixed bag. Some sectors are having a very good year, others are coming off the back of a tougher period – but there are no real signs of distress. People are getting on."

Matt Ryan noted that this reality makes understanding cost structures, particularly fixed costs, more important than ever. And yet, as both other panellists acknowledged, many businesses still struggle to define what those fixed costs actually are.

Will challenged the assumption that fixed costs are immovable. He raised that while they may not change directly with scale, they can – and should – be actively managed. Instead, he suggested the problem is visibility. "A lot of farmers don't really know what their fixed costs are," he said. "And that can be a little alarming."

Variable costs are relatively easy – seed, fertiliser and sprays arrive neatly packaged on invoices and can be divided by hectares at the click of a button, he continued. Machinery, however, is another matter entirely. True machinery costs sit across depreciation, finance, insurance, servicing and repairs, fuel use, labour and utilisation – and they rarely reveal themselves in one place.

A more cost-effective option?
NAAC's Matt Redman raised the debate of whether it's more cost-effective to use a contractor over owning machinery and advised that this should be considered on a per-machine basis.

Biggest ever LAMMA
It was the biggest ever LAMMA, with over 800 exhibitors and more than 45,000 visitors to the NEC over the two-day event.

Will explained that to understand the real cost of a single operation, such as drilling, requires breaking those elements down in detail: how many hours a tractor works across the year; how much value it loses annually; what it costs to maintain; how many hectares the drill actually covers; and what work rates are realistically achieved. Only then can a meaningful cost per hectare be calculated, he said.

Do that properly, and the result can be sobering, warned Will. He then gave an example of a drilling cost of £153/ha, which concealed an uncomfortable truth: around half of that figure was depreciation – a cost that remains largely invisible until a machine is traded years later.

"This is where the industry gets caught out," he stressed. "We don't feel depreciation day-to-day, but it's very real."

A further complication is that machinery budgets often fail to match the time horizon of the commitment. Hire purchase agreements may run for 3-5 years, warranties for 5-7, yet many businesses still budget on a single-year basis. "People will happily sign a three- or five-year HP agreement," said Will. "But they don't always have a budget that looks forward for the same length of time."

Without a forward-looking view, it becomes impossible to judge whether those commitments remain affordable if cropping changes, margins tighten or support payments fall, he added. That realism must also extend to yield assumptions. "Be realistic is the starting point," stressed Will. "Nowhere grows 10t/ha wheat every year. If you can only grow eight, make sure your budgets work at eight."

His parting provocation resonated strongly in a machinery-focused room: does the industry need to be less Anglo-Saxon in its instinct to own everything?

Matt Redman then picked up the theme by examining machinery strategy through a practical lens: do you actually need to own the machine in question?

Using a 400ha arable business as an example, he compared the cost of owning a used combine with employing a contractor. Factoring in depreciation, interest, insurance, labour, fuel and repairs, owning the machine came out at around £164/ha. A contractor, using NAAC pricing survey figures, delivered the same operation for approximately £132/ha.

The difference – £32/ha – equates to a £12,788 saving across the farm. Perhaps more importantly, it removes risk. "Using a contractor makes it far easier to budget," explained Matt Redman. "There are no hidden costs – no surprise repairs, no depreciation risk, no labour issues."

If cropped area reduces, for example through SFI participation, contractor costs fall accordingly, while ownership costs don't.

That's not to say contractors are always the answer. Matt Redman was careful to stress that flexibility, timeliness and labour utilisation still matter. In tight harvest years, control has a value of its own, and relationships with contractors need to be built, not bought. "We all know how tight labour is," he added. "Finding someone who can operate that level of technology properly isn't easy."

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To spend, or not to spend?
In a seminar session, panellists explored in depth the key considerations when it comes to investing in machinery. L-R: Matt Redman (NAAC), Matt Ryan (Oxbury Bank) and Will Foyle (Hutchinsons).

But from a fixed-cost perspective, contracting offers something many businesses sorely need – certainty.

There's also the wider issue of capital employed. With machinery prices continuing to rise, generating an acceptable return on large sums tied up in iron is becoming increasingly difficult.

"We're seeing businesses with millions of pounds of capital employed," said Will. "In some cases, the same work could be done for the same cost without carrying that level of risk."

The discussion also moved beyond machinery to the broader point that cost control isn't simply about cutting back. Will argued that productivity is the biggest diluter of fixed costs available – a 25% yield increase spreads the same machinery, labour and finance costs over far more output.

"If you produce more tonnes per hectare, those fixed costs fall very quickly," he added.

That principle applies equally to variable inputs. Blanket approaches to fertiliser rates, for example, risk spending money for yield that may never materialise. "A lot of people say, 'I'm growing 10t/ha wheat, so it requires 220kgN/ha,'" said Will. "But the question is – have you ever actually grown 10t/ha wheat?"

The panel concluded by stating that the challenge now is to run farming as the business it is: knowing true costs of production, hedging risk, planning machinery investment over 5-7 years, and resisting the temptation to make capital-heavy decisions for emotional rather than economic reasons.

LAMMA will always be a shop window, and rightly so. Innovation matters and it's what keeps the sector moving and progressing. But as this discussion made clear, the most important machinery decision many businesses will make this year may be deciding not to buy at all – or at least not until the numbers, not the paintwork, stack up. ●

Machinery decisions: questions to ask before you buy

- What's the true cost per hectare or per hour once depreciation, finance, labour and repairs are included?
- Does the budget cover the full life of the agreement, not just the next 12 months?
- How sensitive is this cost to changes in cropped area or workload?
- What return is the business making on the capital tied up in machinery?
- Could the same output be achieved through contracting, collaboration or joint ownership with less risk?
- Is this purchase driven by operational demand, or by convenience, habit or timing?
- If margins tighten in year three or four, does the decision still stack up?

Innovators wanted...

With no shortage of new launches on the show floor, LAMMA also prompted discussion around how innovation is accessed, trialled and adopted on farm.

Across both the exhibition halls and the seminar programme, there was a recurring focus on practical routes that allow growers to engage with new ideas, technologies and approaches without taking on unnecessary risk.

That theme came through clearly in two very different sessions: the launch of Techneat Engineering's new hire scheme, and an update on ADOPT, the farmer-led funding stream within Defra's Farming Innovation Programme.

Launched at the show, Techneat Hire is intended to give farmers and growers access to the company's precision application equipment without the capital cost or long-term commitment of ownership. The scheme covers Techneat's full range, allowing machinery to be hired for a specific part of the season or to trial newer developments such as optical spot spraying or precision nutrient placement.

For time-sensitive operations, the attraction is having equipment available when conditions are right, rather than waiting on contractors, while also avoiding the cost of owning kit that may only be used occasionally.

It's a model that reflects both tighter margins and increasingly flexible cropping plans, says the firm, but also the reality that many technologies need to be seen working on farm before confidence builds.

A similar emphasis on accessibility ran through a seminar updating growers on ADOPT, which is now a year into its three-year programme. ADOPT is designed specifically to support farmer-led innovation, funding practical trials and demonstrations based on growers' own ideas.

Grants are relatively modest, typically £50,000-£100,000, and projects run for six months to two years, encouraging focused, field-scale testing rather than longer-term research. Two types of funding are available, including facilitated support grants aimed at farmers with little prior experience of innovation funding, pairing them with a project facilitator to help develop and manage applications.

Examples shared at the seminar highlighted the diversity of work being supported. Projects include the use of biochar in drainage systems on rewetted peatland, on-farm production of live insect protein for poultry using waste streams, large-scale trials of virus-tolerant sugar beet, and investigations into alternative biomass crops for peat replacement. While the topics vary, the common thread is that all are being tested at a scale and in a context that reflects commercial farming conditions.

Taken together, the hire scheme and the ADOPT programme point to a broader shift in how innovation is being approached. Rather than requiring full commitment up front, both offer ways for growers to try new ideas, gather evidence and decide what fits their business before taking the next step.

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New year, new launches

With more than 800 stands, here's a look at just some of the new launches from this year's LAMMA event

JCB

The JCB stand always draws a crowd at LAMMA and this year was no different, with new launches spawning right across the stand. However, the real stand-out of this year was the firm's all new Fastrac 6000 Series, with the flagship Fastrac 6300 taking centre stage and being awarded Gold in the Machine of the Year category at the show's innovation awards – a nod from the judges to its combination of power, capability and operator-focused engineering.

Built around a 6.7-litre, six-cylinder FPT engine developing 335hp and up to 1400Nm of torque, the 6300 brings updated powertrain and control systems to the iconic high-speed Fastrac line.

With a ZF continuous transmission offering speeds up to 66kph and multi-mode advanced four-wheel steering, it's engineered to balance field performance with safe, comfortable roading and headland work.

Hydraulics on the 6300 are rated to 205 l/min, with an option to increase flow for demanding implements, while rear linkage lift capacity is rated at 11,000kg and an optional 5000kg front hitch broadens implement flexibility.

Cab features include an intuitive iCON control system, integrated guidance capabilities and a spacious, configurable environment designed to support long days in the seat, while the available central tyre inflation system helps optimise traction and efficiency across work cycles. Learn more about this new machine in next month's *CPM* (March).

NEW HOLLAND

New Holland used LAMMA 2026 to showcase a refreshed and expanded machinery line-up, led by the new T7 Standard Wheelbase (SWB) tractors in the 180-225hp segment.

Positioned as a step change for the range, the latest T7 SWB models place a strong emphasis on efficiency, manoeuvrability and operator comfort. A redesigned front axle delivers a 17% tighter turning circle than previous models, improving performance in confined yards while also contributing to a smoother ride on the road and in the field.

The updated Horizon cab introduces improved materials, greater storage and revised control layouts, alongside enhanced climate control, suspension options and roof configurations to support long working days.

Transmission choice remains central to the offering, with Auto Command CVT available from launch, joined later by Dynamic Command and Range Command semi-powershift options.

Fuel efficiency has also been a development focus, with the T7.225 Dynamic Command already setting new DLG PowerMix benchmarks in its power class.

Alongside the T7 launch, New Holland also highlighted the W170D+ Forage Power wheel loader, which recently won the Farm Machine 2026 award for material handling at Agritechnica, underlining the brand's broader focus on productivity, comfort and specialist performance across its range.

FIELDBEE VISION

And it wasn't just all about four wheels... digital technology was also firmly in the spotlight at LAMMA, with FieldBee Vision taking Gold in the Digital Technology Innovation of the Year category.

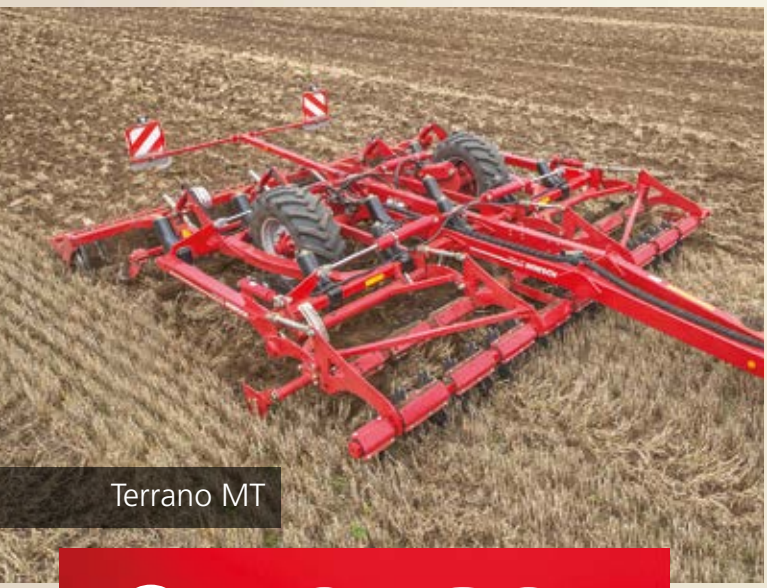
Designed as a retrofit solution for small to medium-sized farms and contractors, FieldBee Vision combines centimetre-level RTK guidance, AI-powered crop sensing and visual odometry within a single modular platform.

The system is built around two core functions: VisionSteer, which delivers automatic and accurate steering in challenging environments such as orchards, vineyards and uneven fields where GNSS alone can struggle; and VisionPro, which uses real-time crop analysis to support variable-rate fertiliser and pesticide applications.

By integrating multispectral cameras, AI processing and RTK correction, the system is intended to reduce operator fatigue while improving accuracy and input efficiency. Development has been guided by farmer feedback and agronomy expertise, with a clear focus on practicality and ease of installation rather than bespoke machinery.

The judges highlighted FieldBee Vision's ability to make advanced precision farming technologies more accessible and affordable, particularly for growers looking to improve productivity and sustainability without investing in new tractors or specialist equipment.

Joker RT



Terrano MT

Terrano FX

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TOGETHER FOR A HEALTHY AGRICULTURE

House ad to come

Why changing steel alone won't fix soil

Cultivation decisions are often treated as a machinery choice, but their impact runs far deeper. *CPM* explores how one farm's shift in soil and cropping management has changed what steel is asked to do – and why that matters for establishment.

By Charlotte Cunningham

There are plenty of reasons why cultivations creep deeper, heavier and more frequent over time. A tight planting window, a wet harvest, a patch that didn't drain, a crop that struggled last season. Each pass makes sense in isolation, until suddenly the cultivator is being asked to correct problems it didn't create.

At Wicken Estate in north Norfolk, farm manager Toby Hogsbjerg can point to fields where that pattern once felt unavoidable. Potatoes, onions and sugar beet don't forgive poor seedbeds, and on light, stony soils there's little room for compromise. He said for years, multiple cultivation passes were simply part of the cost of getting a crop established.

In a seminar session at last month's LAMMA event, Toby explained that what changed wasn't the machinery, but the expectation of what cultivations should be responsible for.

Rather than asking steel to rebuild structure every spring, Toby began focusing on what was happening in the soil for the other nine months of the year. Gradually, as rotations diversified, cover crops were introduced and grazing brought back into the system, the workload placed on cultivations began to ease.

"The soil has to be capable of carrying what you're asking of it," said Toby. "Otherwise you're just chasing your tail."

That shift in thinking – from cultivations as the driver of soil condition to cultivations as a response to it – underpins how Wicken Estate now approaches establishment across its 900ha of mixed cropping.

The estate runs a demanding rotation with cereals sitting alongside potatoes, onions and sugar beet, and around 200ha of spring cropping in total. The soils are predominantly sand to sandy clay loams with flints a constant constraint, while organic matter levels are never going to be high, and irrigation is a necessity rather than a safety net. "This isn't a farm where you can afford to get soil management wrong," explained Toby. "Root crops expose weaknesses very quickly."

Historically, those weaknesses were managed mechanically. Ahead of potatoes in particular, three or four cultivation passes were commonplace, driven by the need to remove stones, create tilth and correct compaction caused during harvest.

Fuel use and metal wear were obvious costs – less obvious was the cumulative impact on soil structure. Land lifted late and left bare over winter was prone to slumping, surface sealing and poor infiltration, raised Toby. Come spring, cultivations were required not just for seedbed creation, but to repair ▶

damage already done. “You end up in a cycle where every year you’re fixing the same problems,” he admitted. “And each year it takes more effort.”

That realisation is the result of years of trial and error, rather than a single turning point. Earlier in his career, Toby worked on farms where cultivations were expected to solve almost everything. When he later moved to shallow soils in Oxfordshire with severe blackgrass pressure, those assumptions were tested. “On that ground, we had no choice but to rethink the rotation,” he said. “Spring cropping came in, and with it, cover crops and grazing.”

The effect was gradual but clear – soils that had been tight and lifeless began to show better aggregation. Rooting improved and cultivations became easier, not because the machinery had changed, but because the soil had. “It wasn’t a lightbulb moment,” commented Toby. “It was more a slow realisation that steel can only do so much.”

Those experiences shaped how he approached Wicken Estate. From the outset, the aim was not to eliminate cultivations – unrealistic in a root crop system – but to reduce how much correction they were expected to deliver.

At the heart of that approach was an understanding that soil health isn’t a single metric. Physical structure, chemical balance and biological activity are interdependent, and changes to one inevitably affect the others, raised Toby.

Physically, soils require stable aggregation, pore space and continuity at depth. Chemically, nutrients must be available in balance, not locked up or excessive. While biologically, soils must support the organisms responsible for aggregation, nutrient cycling and recovery after disturbance.

A holistic strategy

For years, multiple cultivation passes were simply part of the cost of getting a crop established at Wicken Estates. Now, cover crops, livestock and feeding the soil is all part of the strategy.

Soil carbon sits at the centre of that interaction, not as an abstract sustainability target, but as the fuel that supports structure and biology. “If you don’t have roots feeding the system, you don’t rebuild what cultivations break,” said Toby. “And then you’re relying on steel again next year.”

From a cultivation perspective, that distinction matters. Reducing depth or passes without improving soil function simply shifts the problem elsewhere, often into compaction layers or restricted rooting.

The first practical change at The Wicken was the introduction of cover crops, initially on a trial basis. Full-field cover cropping wasn’t always possible due to harvest timing and traffic, so early work focused on strip tillage ahead of spring crops.

“The contrast was obvious,” said Toby. “Where the strips had cover crops, the soil was easier to work, better structured and full of worms.”

That visual evidence then drove wider adoption. In fact today, more than 160ha of spring cropping is cover cropped annually, with mixes tailored to crop requirements rather than a one-size-fits-all approach.

Ahead of potatoes, diversity is prioritised. Multi-species mixes include vetches, clovers, tillage radish and buckwheat. Legumes provide nitrogen and continuous rooting, radishes create vertical porosity and improve drainage, while buckwheat is used to mobilise phosphate.

“On these soils, phosphate availability is more of a limitation than absolute levels,” explained Toby. “Buckwheat has been very effective at unlocking what’s already there.”

The inclusion of buckwheat makes the mix ungrazable, but that trade-off is accepted for the benefit it brings to the following potato crop.

On onion ground, disease risk dictates a different approach – fusarium pressure means cover crops must be simple and short-lived. As such, mustard, radish and vetch mix is drilled early, grazed off quickly and destroyed in time to allow planting in mid-February.

Sugar beet sits somewhere between the two, explained Toby. A diverse mix similar to potatoes is used, minus the buckwheat, and grazed carefully to retain surface residue and root channels.

Livestock integration has also become central to how cover crops function within the cultivation system.

More than just steel

Toby Hogsbjerg of Wicken Estates believes if roots aren't feeding the system, they don’t rebuild what cultivations break – which means relying on steel again next year.

Sheep graze covers from November through to March, managed to avoid over-compaction while maintaining soil cover. On light soils prone to slumping, that living cover is critical, highlighted Toby. He said fields left bare over winter are far more likely to seal and lose structure, increasing the need for remedial cultivations in spring.

As soil structure has improved, the role of cultivations has changed. Passes have reduced, depth has become more consistent and the demand for aggressive correction has declined. “We’re still cultivating,” stressed Toby. “But we’re not asking cultivations to rebuild the soil every year.”

Subsequently, fuel use has fallen, metal wear has reduced, and timeliness has improved. While agronomically, crop performance has become more consistent, particularly in seasons where moisture availability has been limiting.

To underpin those observations, Wicken Estate has invested heavily in soil assessment. The entire farm has been TerraMapped, allowing variable-rate applications of lime, gypsum and potash based on soil type and nutrient availability. Physical soil assessments are routine, with digging and visual evaluation used to guide cultivation decisions before machinery is deployed.

The experience at Wicken Estate underlines a simple point – cultivation change isn’t a shortcut to soil improvement. Reducing passes or depth only delivers benefits when soils are biologically active, chemically balanced and structurally resilient enough to cope. Cultivations still matter, concluded Toby – they just shouldn’t be doing all the work.

Innovation in cultivations

While system changes increasingly shape cultivation strategies, machinery design continues to evolve to support more precise, targeted soil movement. Recent launches reflect a clear trend toward improved depth accuracy, higher tool density at shallow working depths, and greater flexibility to match cultivation intensity to soil condition. Here's a look at some the latest options


Kuhn.


Horsch.

KUHN

Debuted at LAMMA 2026, the Kuhn Highlander 6000 extends the manufacturer's shallow tine cultivator range with a specification designed for precise 3-20cm stubble cultivation, scalping and seedbed preparation. The 6m machine features four rows of non-stop mechanical safety tines with a 350kg release force, allowing consistent soil engagement while protecting the frame and wearing parts when encountering stones or compaction layers.

A choice of carbide or forged points enables operators to tailor aggressiveness and wear resistance depending on soil type, residue load and working depth. Depth control is managed via up to eight gauge wheels working in conjunction with a floating drawbar, helping maintain uniform shallow depth even on undulating ground.

Front pre-cutting discs are available to slice residue ahead of the tines, improving flow and reducing hair-pinning in high-trash situations. At the rear, operators can choose between levelling blades, levelling discs or a range of consolidation options, supporting use in both dry and wetter conditions where consolidation may need to be reduced.

VÄDERSTAD

Väderstad has expanded the ultra-shallow capability of its Carrier XT and Carrier XL disc cultivators with the introduction of a third-axle front tool. The configuration increases disc density by 50%, tightening spacing to just 8.3cm and placing significantly more tools in the ground at shallow working depths.

The higher disc concentration increases mixing and crumbling intensity, improving residue incorporation and mechanical weed control at depths typically below 5cm. Field testing suggests the configuration encourages faster and more even weed germination ahead of a second pass, supporting the creation of effective stale seedbeds and reducing reliance on chemical controls.

The third axle uses standard Carrier disc arms and can be specified with CrossCutter Disc, CrossCutter Disc Aggressive, 450mm discs or 470mm TrueCut discs, allowing the machine to be matched to soil type and cultivation objective. Väderstad says the approach also helps preserve soil moisture while maintaining low fuel consumption, making it suitable for both conventional and organic systems.


Väderstad.

HORSCH

Horsch has updated its cultivator portfolio across shallow, medium and deep tillage applications, with a focus on depth accuracy, residue handling and operational flexibility. At the shallow end, the new 12m Cruiser 12 XL joins the existing 7 XL and 9 XL models, targeting post-harvest stubble cultivation. Equipped with FlexGrip tines pre-tensioned to a 180kg release force, the machine is designed to maintain consistent working depth across varying soil conditions.

Further updates include revisions to the Joker HD, featuring a new folding mechanism and frame design to improve transport behaviour and ease of operation. Horsch has also introduced a trailed Finer XL spring-tine cultivator, offering greater working widths for higher-output systems while retaining shallow, precise soil movement.

At the deeper end of the spectrum, the Fortis 8 AS expands the universal cultivator range with an 8.2m working width and depths of up to 30cm, using the TerraGrip tine system to offer a wide choice of points and wings. More compact Fortis LT models and the mounted Tiger 3 SL complete the range, reflecting continued demand for flexible cultivation tools capable of working across mixed systems.

Sowing with all of the options

> *"I think it could be a very good drill on lighter land, and a good one at slightly slower speed on heavier land like ours."*
>
> NIGEL CRESSWELL

Adding a mounted tine model to form a fleet of four drills has extended the crop establishment choices open to one Suffolk farm, helping to match workload and conditions. *CPM* finds out how this stacks up and why, in only its first season, it sowed almost every hectare.

By Martin Rickatson

There's a school of thought that suggests in an ideal world, a farm would have a drill to match every situation which can occur within and without the business's control: varied soil types and stone contents, dry or damp conditions, chopped or baled straw, and of course different crop types.

However, from direct through min-till to full-till, whether single/double disc, tine or Suffolk coultered, the perfect drill to match every variable on any one farm arguably doesn't exist.

Investing in multiple drills is, of course, a fantasy scenario for many farms, particularly in the current climate of low returns and rising machinery prices. Yet investment in a full new fleet or splashing out on an all-singing, all-dancing drill aren't necessarily the only approaches.

For Suffolk-based AW Fane Farms near Woodbridge, supplementing an existing well-worked fleet of three with a relatively simple tine-based fourth drill has helped stay ahead of the autumn workload for a team of two operators covering 300ha (750ac) – while retaining options for different situations.

When reassessing his drill fleet ahead of autumn 2025, farm manager John Daniel says he was looking to benefit from the Farm and Equipment Technology Fund (FETF) to help boost crop establishment timeliness and minimise establishment costs. Having ceased sugar beet production three years ago, the business's crops comprise wheat, barley, oilseed rape and combining peas or beans.

Despite a long-established min-till regime, the medium clay ground can be challenging to establish on, particularly in extremes of wet or dry, he explains.

For a number of years this has relied on a 4m Väderstad Rapid cultivator drill, supported by a 4m Kuhn power harrow combination for conditions where speed must be sacrificed for more thorough soil-working. Both work on ground that's been min-tilled, generally by a Sumo Trio leg/disc/press where deep loosening is required, with a pair of 6m Maschio power harrows following up ahead of the Rapid if required. The farm also retains an elderly 4m Massey Ferguson 30 as a bean drill for distributing seed on the soil surface before ploughing-in.

"The Rapid has a high workrate in good conditions, but if it gets wet it has its limitations," explains tractor operator Nigel Cresswell, who works alongside second driver Rhys Pedrick. "In a wet autumn we've tended to switch to the power harrow combination, but although it's a sure method of crop

Managing risk

One challenging season can have long-term consequences, and that was a key reason behind adding the drill to the fleet, explains Nigel Cresswell.

establishment, it's also a slow one and can really stretch out our drilling period.

"So, when the last round of the FETF opened, John decided to apply and use it to invest in a mounted tine drill to add to our drilling options, on the basis we'd get on faster in a wider range of conditions, and even directly into stubble should we decide to try some no-till.

"Several neighbours seemed to do well with similar machines, with decent workrates and crops that established well," he says.

While the market isn't short of such machines, good experiences with a KRM Bogballe twin-disc fertiliser spreader led to considering a drill from the same importer – although it's produced by a different manufacturer than the Danish spreader. It was a good dealer show price that then sealed the deal on a KRM Soladrill SM-P.

Looking in more detail, the drill is made by Spanish seeder specialist Sola, which KRM has been the UK importer for more than two decades. The two companies describe the machine as a 'new concept' direct tine drill capable of sowing into ploughed seedbeds or min-tilled land, or planting directly into stubbles. They also state the SM-P is capable of drilling through fully-established cover crops up to 15cm high.

Being tine- rather than disc-coultered, KRM and Sola suggest this negates the need for an overly-heavy build to aid penetration in hard ground, while eliminating the risks in wetter conditions of smearing or leaving open slots with seed exposed.

Available in 4-7m working widths, the drill is built to a close-coupled design to aid weight distribution and traction. A new front left-mounted calibration system enables the desired sowing rate to be set from a single setting, and after seed collection, the recorded weight is entered into the drill's or tractor's ISOBUS terminal.

Seed is metered from a 2000-litre pressurised hopper via a stainless steel unit that can be disassembled without tools for cleaning. From here it's sent to the coulters via external distribution heads – which tramline valves are mounted directly – shutting off two rows apiece as standard, with three optional.

Drill fleet

Prior to purchasing the KRM Sola SM-P mounted tine drill, AW Fane Farms relied on a 4m Väderstad Rapid cultivator drill, supported by a 4m Kuhn power harrow combination.

Tines are spaced over four rows with a 40cm stagger, which KRM suggests aids trash flow and the ability to drill directly where desired. The narrow tine tips are angled forward to pull the coulters into the ground and aid soil closure around the seed slots. Then, sowing depth is set centrally using two ratchet adjusters and a parallel linkage, with two front and two rear depth wheels.

"One challenging season can have ▶

long-term consequences, and that was a key reason behind adding this drill to our fleet," highlights Nigel. "The very wet autumn here two years ago set back our drilling plans, and as a result we extended our SFI area of legume mix. But a further driver behind our changes has been an extended cropping area, with 80ha of land added two years ago.

"That came to us in spring rather than the previous autumn as we'd hoped, as wet weather delayed lifting the sugar beet on it. That wet autumn and the land purchase left us playing catch-up, so we decided to reassess our drill fleet to speed-up workrates."

While it was originally intended to have two drills on the go where possible to cater for different farm areas and soil types, Nigel had to take some time off work last autumn, leaving fellow operator Rhys to take on most of the drilling, exclusively using the KRM Sola SM-P.

"The only crop it didn't drill was the OSR, which we establish with an air seeder on our Trio," explains Rhys. "At first it was used on ground worked with the Trio, but during the season we also added a Sumo Vaxio disc/tine/levelling board/press combination to our cultivation equipment, and in future this is likely to be the ideal tool ahead of the drill unless deeper loosening is required.

"The tines are well-spaced and trash flows well through the drill, although we gave it some challenges, including drilling a rotational legume fallow after two years. With no cultivation elements, though – unlike our other two main drills – we've found pre-cultivations have to be good on these soils."

Rhys points out that if pre-cultivations haven't been great, this can be an issue. "Some of our heaviest land is really ugly and requires further work ahead of the drill. Occasionally I found I had to slow my forward speed to keep consistency,

KRM confidence

The farm purchased its KRM Sola drill based partly on good experiences with a KRM Bogballe fertiliser spreader from the same importer and dealer.

and we also faced some challenges with the wetter conditions of the previous year leaving behind deep tramlines."

A move to a 6m working width also helped the drill significantly raise the farm's daily drilling workrates, helping address the fact that Rhys was on his own sowing most of the year's winter crops.

"KRM and our dealer Ernest Doe helped set up the machine and on the whole we got on okay, but some of the conditions were challenging and there are a few things we'd like to look at ahead of next season. We have a good relationship with KRM and the dealer, so we hope to learn more about how to get the best from it this year, when hopefully we'll be less pressured and both of us can work together."

Rhys adds firstly, identifying the correct cultivations for each field is critical – something that drove the farm's decision to invest in a Sumo Vaxio combination cultivator. "We also have to find a way to reduce compaction from the depth wheels, which was an issue despite the eradicators. And, there were some problems with exposed seed, which we're hoping the right cultivations might also help to address."

The 6m drill worked behind a John Deere 6R 155, and while it occasionally struggled, this largely handled the drill okay, although both Nigel and Rhys reckon more power would help achieve the ideal forward speed.

"I think the right speed is essential for the best results with a drill like this," points out Rhys. "Our aim wasn't to make another pass – for cost and labour reasons – but some seed remained visible which gave concern. That said, most of our crops look pretty good and the time taken and fuel used for the work was less than it would have been with the other drills."

He adds that the drill's build quality is generally good. "We did break a marker arm – although we use GPS, markers are still handy. Calibration is quick and easy once you're used to it, with a difference of just 1% between required and drilled rate. We work to variable seed rates according to mapping supplied by our agronomist."

On the flipside, Rhys raises that changing depth via the front and rear wheels that carry the drill in work can mean 'a lot of hopping in and out of the cab' to check changes made. "We also found harder ground could be a challenge. We perhaps have more to learn – neighbours have done okay with similar drills."

Delivering results

Tines are spaced over four rows with a 40cm stagger, which KRM suggests aids trash flow and the ability to drill directly where desired.

Nigel believes that having seen the benefits of light cultivation ahead of drilling since the Vaxio arrived, next autumn it'll be the pre-pass of choice ahead of the Sola.

"I don't think we originally appreciated the benefits this has in removing wheelings and evening-out the field surface," he says. "I'm sure the drill is capable of the breadth of work it's claimed it can do, from working no-till through to full-till, but in our situation, light cultivations definitely help.

"Some of the legume fallows we're taking out next year will have been down three years, which I think will present a challenge, as I'm sure some of the roots will be as thick as a thumb. We'll have to think carefully about how we prepare land ahead of the drill.

"Previously we've ploughed in such crops, and we may have to do so again, despite having largely moved away from ploughing. Similar challenges occur where we spray off greened-up land to control blackgrass before drilling."

Having been drilling for 50 years – from around the time the farm's Massey Ferguson 30 drill was launched – Nigel says he's seen a lot of changes. "There's nothing too radical about the KRM Sola SM-P, aside from the technology that controls it, such as ISOBUS. But it's undoubtedly a fast way to establish crops in the right conditions, as Rhys showed by drilling all our land with it last autumn.

"The cost of cultivations in a dry year can write off any profit though, and with input prices remaining high, we have to watch what we spend on crop establishment, something I'm sure drove John's decision to buy it.

"I think it could be a very good drill on lighter land, and a good one at slightly slower speed on heavier land like ours. With some improvements to seed slot closing/covering, I think it has potential," he concludes.

Talking TATIES

Never a dull day

WITH ANDREW WILSON

A year ago I was lamenting light yields, late movement and bad weather... nowt changes! Our potato harvest for 2025 wasn't quite as grim as it was in 2024, but storage is much more of a challenge than 12 months ago.

As predicted, a hot summer resulted in an earlier dormancy break and much more cost in sprout control alone. This time last year we were contemplating a first in store application – whereas this year's crop saw its second dose by mid-January.

The whole industry seems very much on the back foot this year. Movement has been behind for several months and I have all customers wanting to push contracted crop movement back, which adds to cost, risk and workload, and leaves an inevitable hole in cashflow, albeit temporarily. We set our contracts up to suit our workload and finance requirements, and for all there's a bit of slack built in, I'm sure I'm not the only grower feeling a pinch.

Still, it isn't the first time we've adapted to challenge, it's pretty much a prerequisite of farming now. Workload will be shuffled and capacity found one way or another. All working relationships require maintenance from time to time, and mutual give and take recognised. If I have a crop not storing well, somebody else has to wait so I can move it, so I'm happy to hold sound crop to facilitate similar for others where I'm able, although it's hard when this happens to almost all of my contracts.

A lively crop in-store tells me that this year, seed will be similarly quick to show a sprout, that presents a dilemma. We'd normally crate up seed to be chitted in late-February for planting in mid-to late-May, which in a normal year is fine. High physiological aged seed though may upskittle normality.

We currently lack cold store facilities to hold it in-check should we get a later planting season, but the demand for such is building year-on-year, and the consequences of the crop not getting away well are becoming more expensive. It's maybe a desperate sounding way of justifying infrastructure investment, but it's where I find myself at present.

Not that many years ago, we'd have proforma contracts from customers in the June prior to planting, which made planning cropping and procuring inputs much easier than the hand-to-mouth situation we're currently enduring. As I write this, we don't yet have such information from all of our customers which is making planning difficult. Most require ever more from us in terms of protocol and data, with grower performance being scrutinised far more than I've ever known.

I find this all quite frustrating; I'm always up for a challenge but I can't work magic. It's hard planning improvements when the basics of variety, price and movement periods are unknown only weeks from the start of the planting season.

In more positive news, sugar beet has come up with the goods this year, with bells on. We didn't lift any crop until January this season, which is quite unusual, and as I write this, have delivered about half of our contract. It's safe to say that there'll be some excess this year, with yields for the first time getting me into the 100t/ha club!

Given next year's price dip, we must repeat this, so I ask how did we do it? Was it the placed nitrogen fertiliser? Phosphate liberator? Muck? Limex? The biostimulant I mixed with the fungicide? Variety? The drop of irrigation? Anything to do with timing? Or just luck with the weather?

Probably a mix of all the above, but it's nevertheless quite motivating to produce a high-yielding crop and turn the tide of what had become lacklustre in recent years. Sunshine has helped sugar content which does assist adjusted yield somewhat.

Just to add to the fun of winter, it appears the roof on my 34-year-old grain store is slowly going porous, which is a long way from ideal to say the least. Grain cooling is something that we struggle with and will see some improvements this year. But, the roof needs will halt any aspirations we had for grain conveyors to reduce the compaction caused by the grain pusher on the telehandler that I'm sure is contributing to poorer cooling than we'd like.

This year represents 100 years of the Wilson family being farming tenants of the Castle Howard Estate (or as near as I can work out anyway), so given it's also my half century birthday, we plan to celebrate the occasion later this summer.

Consequently, I've been digging through the archives some detail to illustrate the four generations of farming, and found a few gems, not least some previously unearthed drainage plans that go back to the late 19th century. I think my friend and farming neighbour Pete's divining skills might get some exercise on the back of these, alongside my recently acquired classic tractor-mounted digger, and see what's still working.

There's never a dull day at Brickyard! ●

YOUR CORRESPONDENT

Andrew Wilson is a fourth-generation tenant of the Castle Howard Estate in North Yorkshire. He has a strategic approach to direct drilling on his varied soil types and grows a wide variety of crops. He's passionate about the potato industry and having been utilising cover crops to reduce cultivation and chemical use since 2011, dipped his toe in the water of regenerative potatoes in 2021. @SpudSlingsby

The complicated world of cover crop nutrient release

"You have to build in how much nitrogen has probably been taken up by the cover crops, and how much water is left in the soil."

DR MARC ALLISON

From understanding how much nitrogen a cover crop might release to hearing how technology and research could improve potato growing, CUPGRA's annual conference delivered some valuable insights. *CPM* attended the event to understand more.

By Mike Abram

How much nitrogen can a cover crop realistically transfer to a following potato crop, and could it be used to reduce fertiliser inputs? Those seemingly straightforward questions are far from easy to answer accurately, stated Dr Marc Allison at the annual CUPGRA potato conference in Cambridge.

In a bid to find out more, Marc has co-authored a £4000 literature review for CUPGRA – Cambridge University Potato Growers Research Association – of which, the findings will feed into a separate ongoing review of fertiliser recommendations being undertaken by GB Potatoes.

"The more you go through this, the more complicated it gets," he told a workshop at the conference. This is because nitrogen uptake into cover crops is controlled by a mixture of factors including species type, how much nitrogen residue is in the soil, soil conditions – better structured soils allowing greater root growth take up more nitrogen – and weather, continued Marc.

Cover crop biomass, which research has shown is directly linked to ground cover and solar radiation, is also an important factor, alongside emergence date – more than drilling date – and termination and incorporation dates.

C:N RATIO

However, the carbon to nitrogen ratio (C:N) of the incorporated cover crop mix is a key factor in how much nitrogen will be available to the following potato crop, stated Marc. Cover crops, such as those containing lots of legumes with low C:N ratios are almost instantly mineralised, while mature cover crops with high C:N initially lock up nitrogen. But, that isn't the complete story, noted Marc.

"Eventually [high C:N material] will be processed [by microbes], build up soil organic matter and there'll be more nitrogen."

For this nitrogen release to be most beneficial, it has to coincide with when the potato crop requires it the most – typically up to 35-40 days after emergence, commented

Amalgamated research

Dr Marc Allison has co-authored a literature review for CUPGRA, looking at how much nitrogen a cover crop might release.

International learnings

Independent agronomist Martyn Cox has evaluated three systems other countries are using to measure cover crop performance and nitrogen release.

Marc. If the C:N ratio is too high, nitrogen release may be delayed past the time when the potato crop is actively taking up nitrogen.

For his contribution towards the review, independent agronomist Martyn Cox has evaluated three systems other countries are using to measure cover crop performance and nitrogen release.

He pointed out that perhaps the best of the three is MERCI (Méthode d'Estimation des Restitutions par les Cultures Intermediaries), developed by the Regional Chamber of Agriculture in Nouvelle-Aquitaine, INRA and other partners, which allows for an estimation of nitrogen and other nutrient release.

The method involves a measurement of cover crop biomass, ideally split by species, which is then used with an online platform to incorporate data from extensive experiments and simulation models to provide detailed N, P and K estimates – total amounts, what will be immediately available, or after 30, 60, 90 days or beyond.

"It's very educational," said Martyn, while sharing comparisons between the model and lab analysis of biomass weight within 2kg/ha for a two-species cover crop he'd looked at.

Another system he's reviewed is an American cover crop nitrogen calculation system (CC-NCALC), which Martyn highlighted only simulates nitrogen release. "This worked reasonably well, although you have to use a field location in the US."

For his work, Martyn used Washington State as closest to a comparable climate to the UK. "You use real data and it gives you a prediction for N release for your estimated following crop planting date."

Its prediction for radish was similar to MERCI, he said, but there were significant differences for some cereals, with MERCI predicting immobilisation while CC-NCALC suggesting nitrogen release.

Martyn stressed that a third system used by the Dutch was too complex and included the input of assumptions about cover crop N content, partly because its farmers were encouraged to put nitrogen on ahead of cover crops. Martyn said he thought that would affect the calculation's accuracy in the UK. "We wouldn't recommend you to use it currently," he urged.

RB209

Broadly, the review has unearthed some potential challenges regarding using AHDB's Nutrient Management Guide (RB209) field assessment method for calculating a following crop's fertiliser requirements, when growing cover crops.

"At the moment, how much nitrogen is taken up by the cover crop and the reduced amount of water flowing through the soil profile aren't taken into account properly by RB209," suggested Marc. "Using oilseed rape as a proxy for a cover crop, and comparing it to bare soil over winter, you can change the amount of water that's moving through the profile by a substantial amount depending on the size of a cover crop. ▶

"So if you start making recommendations simply based on excess winter rainfall [on bare soil] and the previous crop, you'll be wrong. You have to start building in how much nitrogen has probably been taken up by the cover crops, and how much water is left in the soil."

Conversely, in a dry winter where there was little nitrogen leaching, a study by Rothamsted Research suggests that growing a cover crop could be detrimental, as the released nitrogen from it might not coincide with when it's required by the potato crop.

"The problem is, of course, you don't know whether it'll be a dry or wet winter, so on average, you're probably better off having the cover crop. But just be aware of some of the problems," stressed Marc.

The literature review also highlighted research that showed some evidence that in cover cropping every year, perhaps by altering the amount of water going through the soil profile or by the slow build-up of nitrogen residues, that you might just be delaying nitrogen leaching to another point in the rotation rather than preventing it.

The problem is, you don't know whether it'll be a dry or wet winter, so on average, you're probably better off having the cover crop.

SCENARIO PLANNING

Finishing the workshop, Martyn discussed different potential cover cropping scenarios to highlight how to consider potential nitrogen release. Variables to note include soil type, cover crop mix, rainfall in early autumn, drilling or emergence date, incorporation date, and the status of the cover crop when chopped.

For example, a mid-August-drilled radish mix on sand, incorporated when green in early February, would likely release nitrogen, he said. "Radishes are deep scavenging and effective at picking up nitrogen, so they'll absorb nitrogen when drilled early," he said.

But the same scenario drilled in early October with higher autumn rainfall would be too late for the cover crop to as effectively mop up nitrogen. "With rainfall before the cover crop emerges, leaching will have already happened.

"It's complicated, but RB209 would have assumed high N-leaching that the cover crop would have prevented in the first situation, but wouldn't have done in the second."

In a second example, he evaluated a mid-August drilled cover crop of black oats terminated in late March; rainfall had been low in autumn. "RB209 would assume on a sandy clay loam in a dry winter, not much nitrogen has been lost. But the cover crop would have taken up nitrogen, and as it's been chopped in late when it's woodier, it's going to take a little while to break down. The outcome will be that you won't get that 30kgN/ha from the cover crop."

Remember cover crops can be radically different in how much nitrogen they might release and when, he concluded.

Helping to reduce costs and improve quality on a Scottish farm

Technology is playing a crucial role in growing and storing potatoes at Lacesston Farm in Fife

Speaking at the CUPGRA conference, farmer John Weir shared that he grows 65ha of white potatoes for the pre-pack market, focusing on yield, baking quality and long-term storability. "The majority is on contract for Greenvale, and everything is lifted as clean as possible directly into boxes."

The farm has two stores with a combined capacity of 4200t, he said, with the newer building fitted with solar photovoltaic panels. He also had a small wind turbine on the farm, with both used to reduce the cost of storage with the help of energy optimisation software.

"It's probably the technology which has shown the clearest quantifiable gain," he pointed out.

Generally, unless it's very windy, the energy generated by the wind turbine powers only one of the two stores, explained John. "The software uses a priority system and will cool the warmest store first and then switch to cool the second store. If it stays windy, we'll over-cool when it's generating power with a view to turning it off when it goes calm. Effectively, we're using the potatoes as a big battery," he said.

Potato storage
John Weir's farm has two potato stores offering a combined capacity of 4200t, with the newer building fitted with solar photovoltaic panels. *Photo: John Weir.*

"That's saved a lot of money. I get a text every day telling me the temperatures in the stores, the amount of energy we've generated, the amount used and what we've exported. My aim is not to export any as that's the cheapest electricity we can use."

In field, GPS technology is used to implement variable rate planting, allowing him to adjust seed density based on the topography of the fields, particularly on land with significant hills.

"Variable rate planting isn't something that's widely used," he suggested. "But the main opportunity I see, is to plant at lower density at the top of hills, because frequently what we harvest from the top are far smaller than those at the bottom."

He's also reduced planting density in tramline beds and directly either side, as he's also found these areas tend to grow smaller potatoes than his baker quality target. "It's trying to even up the crop going into boxes so we don't have these small run boxes that cause a problem."

A lot of the technologies trialled on the farm originate from its involvement with the UK Agri-Tech Centre's farm network. "For example, we have a sound recorder that uses AI to identify which birds we have around the farm – that helps when we're doing a LEAF audit to evidence what wildlife we have."

But, not all of the technology trialled has shown a good return on investment, he countered. "Two years ago, we trialled Harvest Eye technology, which is an optical camera that takes a picture of potatoes going over the harvester, to give a size distribution and total yield.

"It worked well and I thought it might be a valuable tool where I could market exactly what we harvested. Fortunately, that year potatoes were good value, so it made no difference.

"Maybe in a year like this one [with lower prices] where bakers will become scarcer, it might be more beneficial if I could market smaller run potatoes earlier in the season."

Even so, given he knows to a large extent which boxes those potatoes are in already, albeit not down to the individual potato, he said he can't justify the overall cost. "Perhaps if we were grading into store and you set it up on the grader as well, you'd get more use from it by sizing accurately," concluded John.

Utilising technology
Speaking at CUPGRA, John Weir shared that GPS technology is used on his farm to implement variable rate planting in potatoes. *Photo: Beanstalk Global.*

LASTWORD

Fighting my corner

WITH JANINE ADAMSON

Prior to Christmas, I yet again found myself in a heated discussion regarding the merits of this vessel – the humble printed magazine. I did my best to articulate the benefits of our beloved tome, but it seems some 'youngsters' are not on board, neither are they happy to accept a difference in opinion.

What struck me was two-fold – firstly, that to strengthen their own argument (that print was decrepit and digital is the only way forward), they had to slate me, the opposition. According to this individual, 'advertising' in such an old crone of a product is a complete waste of time, given farmers conduct all business online.

Aside from the fact that *CPM* doesn't have advertisers in the traditional sense – we have supporters and sponsors – how can investing in this magazine's existence be a waste? We're here to serve the industry, so much so, rather than an editor, I consider myself a mere facilitator of other people's expertise. I may steer the ship, but you lot (our readers and contributors) are the engine pumping away.

It makes me cringe when I hear individuals slag off their competition. Rightly or wrongly, I don't read alternative farming publications – print or digital – never mind take a moment to critique their business. I'm content letting them hold their own space while I peacefully inhabit mine. In fact, when deserving, I'll go as far as to congratulate my publishing peers on a job well done, I'm that confident in my position.

My primary concern is delivering a magazine that's worthy of our audience, instigates meaningful conversations, and perhaps occasionally, makes a difference. For us, print and digital work hand-in-glove, striving to serve all preferences and modes of digestion. I personally love holding a physical mag or newspaper, the archaic stegosaurus that I am.

Because let's not forget that *CPM* readers want a printed copy to land on their doormat each month. Whenever we ask you, you confirm that's the case. So here we are, confidently striding to the print presses each month, with a cheeky middle finger up to the naysayers (for now... I can't promise this will forever be the case...).

The second thought that occurred to me during this debate was that the person I was having it with really went for my jugular – was that necessary? To me, that weakens the case further. If you cannot have a polite, two-way, adult conversation, then don't instigate the barney in the first place. There really is no need to be rude, just to try and force a win.

The oppressed female inside me would assume that his approach was because I'm of the 'fairer' sex. But really, I think it says more about that man in particular, than anything about me. Perhaps he'd found a stray dog hair in his marmalade toast that morning, taken a shower only to find the towel rail devoid, or stepped on an errant brick of Lego while barefoot.

I believe the most powerful communication is undertaken with a quiet, steady confidence. The type that indicates a person knows their onions and has really thought about the discussion at hand. Plus, it don't cost owt to be pleasant, does it?

In this particular case, I gave up conversing as it was fruitless, and left him to wallow in his supposed victory. At the end of the day, it really doesn't matter to me what others spout, as long as the consensus agrees that *CPM* should continue as a printed magazine.

Of course, if I'm barking up the wrong tree, do let me know.

A random photo of me and the dogs from a recent snow day – being a positively starved labrador, Willow thought the fluffy stuff was food...

YOUR EDITOR

Janine Adamson began her journalistic career writing obituaries for a local newspaper but fast found her stride within agricultural communications. Now, more than 15 years later, she finds herself at the helm of *CPM*. A proud Staffordshire girl from the Moorlands, Janine takes pride in tackling subjects which although aren't exclusively farming, affect everyone.

CPM

CROP PRODUCTION MAGAZINE – FOR FARMERS AND THEIR AGRONOMISTS

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