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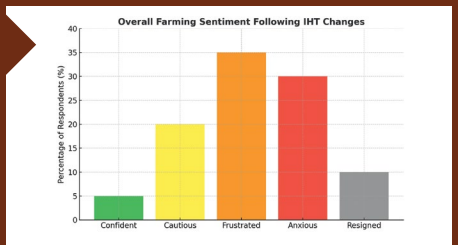

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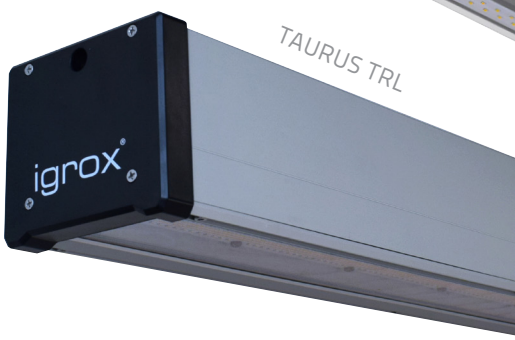

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DIRECT DRILLER MAGAZINE

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INTRODUCTION

WRITTEN BY MIKE DONOVAN

MARKET TURMOIL IS NO GOOD FOR FARMERS

The turmoil in international markets presents a golden opportunity forsome and a costly experience for others. The actions of one man,Donald Trump, the US president and self-appointed leader of turmoil,has damaged not only the UK and other countries that export to the USbut also the American businesses which he wants to protect.It appears that UK business sees doing nothing as the best option,halting investment and development. Other countries and companiestake retaliatory action. If the US can double tariffs, why can't they add50% to their sales price and take advantage of the inflationary moodthat exists today?Chancellor Rachel Reeves is using similar tactics, springing taxes onsectors like farming, and the consequences for farmers are not good. Asglobal markets gyrate, so farming markets, including machinery areaffected. All farmers, especially arable, are caught up in the chaos. The more turmoil in the markets you are trading, the more forwardplanning and action becomes necessary. Some of these measures caninvolve major changes in the ownership structure of the farm business,incorporating complex contracts and huge commercial lawyer fees.Setting up and managing trusts has traditionally been a tool for thelanded gentry rather than working farmers, but this is changing asassets become a taxable resource for government funds.Turmoil in agricultural markets is increased as government supportand subsidy are reduced. Government assurances that the sector willstill be protected to £2.5bn looks increasingly unlikely given the presenteconomic situation. Inflation is up, productivity down and both areclearly the result of increased treasury spending (NHS salaries, winterfuel and other U-turns) and reduced tax takes, including the exodus ofbillionaires. As farm subsidies are reined in, so the return from farmingbecomes increasingly important.Of course, this would happen in (del and replace with after) one of thedriest seasons ever recorded, where yields have been knocked sidewaysand livestock feed costs are through the roof. And as many readerspoint out, conventional cost-cutting initiatives are getting exhausted.Vanity purchases of a flashy tractor or any other machine are now verymuch in the past.The US president's negotiating style of big threat, hasty action followedby a climb-down (all done within an atmosphere of fear), has a deeperconsequence: it can become contagious, with traders turning sharperand less accommodating. Those with deep farming roots will rememberthe old-school trading method, when the grain merchant or livestockdealer arrived to assess and price up the fruits of the farmers' labours.These proceedings were far more than settling a price, because in manyinstances both sides were keen to ensure the same arrangement couldcarry on for future years. It's a rare trader who works on theseprinciples today. Continuity is trumped by today's margin, with complexcontracts which need reading and amending in a way that would beforeign to our grandparents.

GREENWASHING IN ADVERTISING

WRITTEN BY CHRIS FELLOWS

Soap box time – as this is a pet hate of mine. Having been involved in regen for quite a few years, I do feel that it has been hijacked for commercial gain by many businesses without them putting in the hard yards to implement the proper practices. There are several articles in this issue about regen farming and what is means in 2025 and I'd agree it is a personal journey and therefore not easy to define. So, considering that farmers struggle to define what this is, how is it possible for companies to promote their products as regenerative?

Adverts will often claim that something is regen or carbon zero because they plant a few trees – it drives me nuts. Not just because trees take years to sequester carbon (and not die/burn in the process), but because it's not real accounting. If it doesn't happen in the same year the company create the emissions, then it's not carbon neutral in the current year.

However, it seems it's not just me as a marketeer who is annoyed by these claims (which have felt to me to be unregulated). The Digital Markets, Competition and Consumers Act 2024 (DMCC Act) was introduced six months ago in April 2025. It signals a new era in accountability for companies making environmental claims and gives power to the consumer to challenge greenwashing. So, get a pen in hand (or fingers on keyboards) as you can now complain like you have never complained before!

What is the DMCC Act?

The DMCC Act brings sweeping reforms to UK consumer protection law. It grants the Competition and Markets Authority (CMA) new powers to investigate and penalise misleading practices, particularly those involving greenwashing.

For businesses, the DMCC Act empowers the CMA to act without

court involvement and significantly increases the risks of making vague or misleading environmental claims.

Simply put, greenwashing is the process of marketing something as eco-friendly, green or sustainable when it is actually none of these things. It's not good.

Why environmental claims are under scrutiny

This act is a massive positive for regen farmers as it's finally recognising how important the products we grow are at a consumer level. Environmental marketing claims are now one of the CMA's key enforcement priorities. With the rise in consumer demand for sustainable products, businesses are under pressure to differentiate themselves. But with that comes the responsibility to ensure those claims are clear, accurate and verifiable.

The DMCC Act introduces two critical shifts:

- **Provisional Infringement Notices (PINs)** can now be issued based solely on suspicion, posing reputational risk even without proof of wrongdoing.
- **Substantial financial penalties** can be enforced for breaches of consumer law, including misleading environmental messaging.

In short, detail matters more than ever. Broad or unsupported claims like "eco-friendly", "green" or "regen" are no longer acceptable unless they're backed by rigorous, transparent data.

Examples of potential fines:

Violation	Maximum Penalty
Providing false information to the CMA	£30,000 or 1% of global turnover
Breaching CMA undertakings	£150,000 or 5% of global turnover
Final infringement notice	£300,000 or 10% of global turnover

Note: Penalties are based on whichever is higher — fixed amount or percentage of global turnover.

What powers does the CMA now have?

Under the Digital Markets, Competition and Consumers Act, the CMA can:

- Initiate investigations based on reasonable suspicion, without a court order.
- Issue public PINs, warning businesses that their claims may breach consumer law, even before a formal investigation concludes.
- Enforce operational changes, such as requiring updates to staff training or

removal of misleading claims.

- Impose financial penalties based on global turnover and the severity of the breach.

Examples of claims at high risk of greenwashing

Here are common types of claims now considered non-compliant under the DMCC Act:

- **Vague terminology:** Words like "eco-friendly" without context or evidence.
- **Misleading comparisons:** Saying "better for the planet" without defining what it's being compared to or based on what data.
- **Claims based on minimal or selective improvements**, such as "lower carbon" recipes or new packaging, that aren't supported by full-life cycle analysis.
- **Selective disclosures:** Highlighting positive attributes (eg sustainable materials) while ignoring other high-impact areas like packaging or transportation.
- **Unverifiable certifications:** Using self-created badges or logos that are not independently accredited.
- **Offset-only strategies:** Claiming "carbon neutral" purely through offsets, with no emissions reduction effort.
- **Lack of timeframes or goals:** Statements like "on the path to net zero" without defining milestones, scope or measurable targets.

These kinds of claims not only erode consumer trust but now carry legal risk.

Making clear, compliant green claims

The DMCC Act demands a higher standard for environmental marketing, and businesses must respond with a more diligent, transparent approach to sustainability claims. Greenwashing can now carry serious financial and reputational consequences, but these can be avoided by taking the right steps.

To build trust and stay ahead of regulation, businesses should:

- **Substantiate every claim:** Use robust, verifiable data — ideally from full-life cycle assessments (LCAs) or product carbon footprints (PCFs) — to support their messaging.
- **Communicate clearly:** Avoid vague or sweeping terms like "green" or "eco-friendly". Be specific about what aspect of a product is sustainable and clarify scope, timeframe and comparison where applicable.
- **Include qualifiers where needed:** If a claim only applies to a specific component or phase of a product's life cycle, make that clear.
- **Use credible third-party certifications:** Avoid self-created labels. Where appropriate, rely on independently verified certifications to reinforce the credibility of their claims.
- **Align with the Green Claims Code:** The CMA's Green Claims Code outlines six key principles for making fair, honest and substantiated environmental claims. Use it as a compliance baseline.

By embedding these principles into sustainability messaging, companies not only reduce risk, but also build stronger, more credible relationships with customers, investors and regulators. The easiest way to do this is to include the farmer – after all, they're the ones doing the regen bit at the heart of the marketing message. Farmers, get ready, you are now the essential part of any public-facing regenerative message. I expect to see lots of you in adverts for years to come.

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Farwiza Farhan, the remarkable conservationist working in the Sumatran rainforest, spoke recently of the superpower of naivety. If she had fully understood the complexity of the problems she was wading into, it would have been impossible to begin. This touched a deep chord with me, remembering how little I knew when I sold the financial security of my song rights to begin farming, and how little Edd, George, Adriana and I knew, the day we set up Wildfarmed to change the UK food system.

Naivety and a sense of mission are incredibly powerful in getting things started. They give you the energy to turn “No” into “Yes”. But then comes phase two, in which Farwiza described increasing knowledge bringing an understanding of the nuance and complexity required to make real, scalable change. It meant building bridges with those you have criticised, sitting down with the people who’ve tried to derail your efforts, and putting aside preconceived ideas in the search for the most effective way to deliver the change you want to see. Hearing this for me was like a replay of the song “Killing Me Softly” in which the singer seems to be singing your personal story.

This second, nuanced phase of ‘meeting the world as it is’, is a tiring, twilight zone, described well by Jude Fredman.

“You already know it's going to take years. You already know it's going to be hard..That's not the problem. The problem is that deep down, part of you is still hoping there's a shortcut. But there isn't. There's just the work.”

In the case of food and farming, it’s increasingly urgent work. In 2024 UK cereal farms posted a loss on farming activities of £26,500. Worldwide, we produce enough calories for 15 billion people, less than half of which end up on people’s plates. Wild weather hitting degraded ecosystems is creating scarcity, on the fringes (so far) of the food system - chocolate, coffee, olive oil, some vegetables - driving inflation such that the European Central Bank said "food price developments represent a major challenge for the ECB in its pursuit of price stability." Here in the UK the health and environmental costs of the food system are significantly greater than the NHS budget.

All of this suggests that future economic and social stability requires supporting farmers to grow good food on land that is resilient thanks to healthy, water-holding soils and abundant nature. This was the message I took to the Labour Party conference again this year.

In a repeat of last year's diary clash - DJ’ing at 5am in Ibiza and speaking to delegates at 5pm, this time I headed towards Liverpool too few hours after leaving a warehouse in Bristol. Once again, phones held up by clubbers in the front row displayed farming messages. “I love regen” “Wildfarmed" “Clarksons”

Saturday night into sunday morning

Perhaps it’s a subject that resonates so much because amidst all of today’s turbulence, there’s an ever-increasing need for hope, purpose and agency. Without this, all that’s left is anger.

Many farmers have talked movingly about the return of agency when they began farming in a way that replaces pre-prescribed inputs with observing, managing, and optimising the potential of their land. When high street shoppers are able to buy food from these farmers, this agency to make things better is transferred to them. It allows them to act on the late Jane Goodall’s words, when I heard her speak on a grey, early morning Glastonbury stage this summer, still inspiring new generations to action, “What you do makes a difference - decide what difference you want to make.”

Successful Regen requires depth of implementation, something too often overlooked when acres are enrolled in regen programs. This is why we chose to work with farmers on part of their farm so that a fundamentally new approach

could be tried at an acceptable level of perceived risk. Much has been learnt from running different systems side by side, as we collectively search for the sweet spot between food production, good farmer outcomes, and nature.

With the help of AI, system science rather than the single-variable science never suited to living farm systems, is advancing fast. With it, monitoring and management tools are getting better all the time. But effectively responding to what this data tells us isn't always easy. One complication we've found, underlined again in another year where plans had to respond to extreme conditions, is that farming decisions can be forced by the financial realities of hugely expensive machinery. Contractors needing to cover thousands of acres to pay the bills inevitably favours one-size-fits-all operations.

But successful regenerative agriculture requires flexible, timely interventions based on the latest data. It's not about scale—you can farm a small area badly (I know because I've done it), and I've seen large areas farmed well—but it does require the mental and operational bandwidth to be reactive.

This approach proved its value during the brutally dry spring that unfolded this year. Where I farm, there was only an inch of rain between Valentine's Day and Glastonbury, a fourth consecutive year of weather extremes. Up the road at Diddly Squat, it was similar. "In the farming year of 2024-25 I've lost about £5,000," wrote Jeremy Clarkson in The Times, even though "we deployed some proper next-generation technology to maximise the growth potential."

On a couple of Diddly fields, one so stony it could be a crazy paving showroom, technology took a different form. SAP testing to optimise plant health, cover and companion crops. Here Jeremy grew Wildfarmed oats that made a gross margin (output minus variable costs) of just over £20,000. Partly because they were eligible for a low-input cereal SFI option, and a payment for avoided water pollution as part of Wildfarmed partnerships with 7 water companies. But mainly because input costs were kept down and it yielded well, hitting 78% of the conventional yield Jeremy hoped for in his Durum wheat fields, which the drought reduced by two-thirds.

The decent yield despite conditions came down to a cover-crop improved soil structure retaining a little more moisture, and focusing on the detail. There is no technological or biostimulant silver bullet that comes close to the cumulative impact of attention to detail. In this case, when drilling conditions changed, I borrowed the right seed drill from another Wildfarmed grower. The seed went in with a biological boost, the dose and type of nitrogen was adjusted as the drought set in, and I was like a scratched record insisting on accurate SAP tests and using our seasoned SAP experts to interpret them, to keep plants healthy and able to maintain their own farming operations down in the rhizosphere.

Regen plants moving mountains - before and after drilling at Diddly

As harvest approached, the annual Colleymore farm days hosted over 800 people for talks, field walks, delicious food and good beer. I spoke about all I had learned in the last 17 years. I didn't think about it in these terms at the time, but the day I spent pulling down the laboriously erected insect netting around my vegetable patch to embrace integrated pest management and companion planting marked the beginning of attempts to combine nature and food production. Crimper rollers, herbal leys, mob grazing, pastured poultry, poly-cropping, agroforestry, or ten years building and refining inter-row mowers, are just some of the things that have followed.

Farm open days 2025

These 17 years of evolution are a familiar story to other farmers finding their way toward a biology-based system over the last couple of decades. As a result, one thing we can be sure of is that the way we farm to combine food and nature (nature in the widest sense to include everything from soil health to water quality and biodiversity) will constantly evolve.

When the Wildfarmed Standards were drawn up, the constant evolution of best practice made it essential to have an annual review during which the experiences of growers and relevant research could inform the following year's practices. Nevertheless, rather than annually updated practices, the dream from the outset was to have a system built around measured outcomes, moving away from intentions and focusing on what actually happened, and allowing farmers to achieve those outcomes as best suits their land.

At the time ecological surveys were

incredibly expensive, often with large teams of people monitoring decade-long changes in baselines. Certainly, for tenant farmers like me, it was unaffordable. The first breakthrough came when recalling school visits at our French farm. I would send the kids off into a neighbouring farm's field and ask them to find a worm or anything that moves in exchange for free rein on the pain au chocolat. (My pain au chocolat supplies were generally safe.)

Returning to our side of the hedge, we'd look at the abundance of insects and worms in and underneath the pasture. Thinking back to these fields only meters apart, being managed in different ways and with measurable increases of life both above and below ground, led to the idea of relative measures. Comparing two neighbouring sites during the same growing season—a Wildfarmed field and neighbouring conventional control—means that seasonal local weather and the state of local ecosystems are taken into account. It also means those who have been building soils and nature for a long time don't get penalised for already having raised their baseline.

We began putting bowls of water with a dash of Fairy Liquid in Wildfarmed and control fields and comparing the insects. The results were stark. The following season we partnered with Bristol University, formalised this approach and added different bowls and traps for different insect families. Bristol measured a near doubling of insect biomass in Wildfarmed relative to control fields in 2024. While we also have pilots underway looking at birds and bats, their ranges mean that surrounding habitat can distort the data. Insects are key because they are localised, respond quickly to management changes, and like plankton, where they are present the rest of the food chain will follow.

Evolving our Standards in line with annual reviews of farmer experiences and third-party research highlighted the need to study other outcomes, a key one being the effects on soil health of tillage versus glyphosate to terminate cover crops. Personally speaking, taking a dispassionate look at the evidence around glyphosate wasn't easy.

For 14 of the 17 years I've been farming, I farmed organically. While farming in France, I was using a crimper roller to terminate cover crops ahead of maize and soya. (It's frustrating that the flowering period of cover crops required for reliable termination by a crimper means this approach doesn't work for UK spring cereals.) The success of the crimper roller perhaps contributed to my steadfast, vociferous, and vocal opposition to glyphosate.

Yet what we saw from farmers in the Wildfarmed community told a more nuanced story. In fields where pasture or cover crops were terminated with the sprayer rather than with cultivation, the quality of soil structure was undeniable. Wildfarmed commissioned Professor Andy Neal to compare mechanical and chemical cover crop termination, work he continued at FarmEd, where he found that ploughing and roto-tilling after four years of soil restoration under pasture pushed the soil back from porosity that was close to uncultivated ground, to that of the continuous wheat control field.

Testing the grains from crops planted into sprayed-off seedbeds revealed no traces of glyphosate and research elsewhere told the same story, such as a six-year field study conducted in Lithuania on winter wheat, spring barley, spring wheat, and oilseed rape.

Comparing glyphosate and tillage in this specific context of seedbed preparation remains a difficult question to engage with, because the subject is bound up with the environmental impact of GM crops receiving multiple glyphosate applications throughout the growing season, and its presence in food and urine due to use as a pre-harvest desiccant, a practice already banned in the EU and one that should surely be banned here. Yet however difficult it is to engage in nuanced questions in a world of slogans, we have to look these issues in the eye because they're of critical importance to farmers trying to deliver soil and ecosystem recovery while producing food and staying in business.

This spring at Colleymore, we trialled both approaches. Coming out of winter, our heavy clay had a thin dry crust, under which the soil was still sodden, the texture of putty. With cultivation out of the question, there were only two choices: plough it, let it dry, work the soil down and drill, or spray and direct drill. In a 15-hectare comparison of both approaches in neighbouring fields the result this year was brutal. The ploughed soil dried, after which rain never came and these fields were not only a financial disaster but a disaster for the soil, left exposed and bare under the unrelenting sun of the driest spring for 132 years.

Sprayed & drilled (left) verses ploughed & combi-drilled (right), June 2025

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It has been a similar story in the evolving use of nitrogen. The CO_2 emissions associated with fertilizer manufacture and the effect on the environment of the 50% that's typically lost from the field were a key part of my farm talks for a long time.

But again, the reality across our grower community was again more nuanced. We saw the effect of spring soils either too cold or too wet to release the required nitrogen during the critical biomass-building period of the crop, compromising not only yield and farm finances but, thanks to stunted, thin crops, an entire season of sunshine capture - ultimately the only source of energy to regenerate the soils we are trying to improve.

In line with these observations, research showed split-dose nitrogen applications can not only coexist with improving soil biology but, by increasing plant size and sunlight capture, can increase it. “Natural" alternatives such as digestate came with the caveat that they are often derived from maize grown with large amounts of agrochemicals, and applications are hard to tailor to plant need.

All of which was the basis on which we worked with water companies on an approach to split-dose nitrogen that could help optimize plant growth and good farmer outcomes while maintaining water quality.

Again, on a personal level, this didn't make the arrival of my first fertilizer lorry an easy experience. But the evidence was unequivocal and the use of split-dose nitrogen marked a move closer toward meaningful, scalable regeneration that can work in the real world of today’s farming systems, as measured in positive net margins, healthy soils, yields, nature uplift and water quality.

In February this year, the Organic Farming Research Foundation cited new research suggesting that it's not the presence of soluble nitrogen itself that harms soil health, but rather the imbalance between nitrogen and organic carbon inputs, a problem that also applies to other inputs like poultry litter. Farmers have been adding a carbon source to liquid nitrogen for a long time, and carbon-coated granules are now widely available at an affordable price, certainly at the lower end of nitrogen use.

This work on soils, nitrogen, water quality and nature coalesced around a framework that made an outcomes focused system a reality. By the 2024-25 growing season, we had recruited 17 research partners working across soil, water, nature, carbon and additional areas such as nutritional quality and the social impact on farmers of collaborative communities.

With these partners, in 2025 across 33 pilot farms and 2,000 hectares, we used this outcomes framework to try different approaches to delivering our outcomes on biodiversity, water, carbon and soil.

As an example, reliable delivery of insect habitat through bi-crops had posed difficult questions during the 2024 and 2025 seasons due to wild swings in weather. In 2024 we saw wet conditions favouring the dominance of beans over wheat. From a farmer margin standpoint, the sensible response was to reduce the bean seeding rate, but then when drought strikes the following year and these reduced numbers of beans don't fare very well, we begin to lose the creation of habitat the plants are there to achieve.

Flower strips at David White’s farm, a Wildfarmed grower whose huge experience and meticulous application has been so important in finding the sweet spot between farmer nature and food. Insect bowls are joined by AI listening devices able to detect insect wing beats.

Data from the UK Centre of Ecology and Hydrology suggested we could get the same or better bi-crop insect and bee outcomes using flower strips at a given distance and width. Given that we now have barley and oat contracts, and therefore the potential for these strips to become perennial, this has the upside of over-winter habitat too.

Unseasonable weather over the last two seasons has compromised time-critical interventions for mechanical weeding, impacting yields, crop quality, soil health and margins. Heat has its downsides too; the impact of soil disturbance and bare earth between hoed crop rows in hot conditions is something I had witnessed during trials comparing maize drilled into crimper-rolled vetch with conventional organic maize using the hoe. Given the machinery required is costly, unless there are clear benefits to soil or grain quality in insisting on this, we are making a difficult job more difficult still.

LH side maize drilled into crimper rolled vetch RH side, in the same field, maize grown using an inter-row hoe. A rogue sunflower used a measuring tape to compare plant sizes.

Pilot farms had the option of a selective herbicide rather than mechanical weeding; a single application on spring crops, a maximum of two on winter crops, with no applications after growth stage 32 in line with research consistently showing pesticide-free grain when applications are made before this date. Alongside reduced soil disturbance and increased soil cover, these selective herbicides may also help with the management of companion crops.

Non-harvested companion plants, perennial or annual, are exciting in their potential to combine the agronomic upsides of plant diversity and minimised harvest complexity, ensuring as much money as possible flows to farmers, and food from regen systems delivering measurable outcomes is affordable.

I worked on an inter-row mower as a solution to this for ten years. By the time I got to version five, a health and safety nightmare hitched to a Ford Dexta with parasol air conditioning had become a GPS-guided machine

operating at the narrowest possible width that effective blade tip speed and row crop tyres allowed. Yet, just like inter-row hoeing, changes in rainfall patterns made mowing hard to manage, with fields often too wet for 3-meter or even 6-meter mower traffic when an intervention was required.

Meanwhile, for a long time, I had been following Frederik Larsen, a farmer also growing wheat with companion plants, alfalfa in his case. He was using what he called a chemical mower in the form of legume-specific herbicide to knock back the alfalfa and ensure the wheat dominated. As an organic grower, I just didn't even consider that as an option. But now, seen through an outcomes lens, it was time to look again. If measured impacts on soil, grain quality, nature, and yield meant that the only reason not to embrace this idea is because these are nuanced and difficult questions, then we must face these questions. That's what this culmination of work on outcomes measurements is now allowing us to do - work with farmers based on results rather than intentions.

Given the dire straits of farm finances, success equally depends on turning measured impact into value. For a UK field-to-plate food business like Wildfarmed, one of the many complications is the global nature of cereal prices. The 2025 UK wheat harvest is down, but prices are down too, because even though about 80% of conventional wheat milled in the UK is UK-grown, the wheat price isn't a UK price. In the words of Jeremy Clarkson "Can I pass increased cost on to the mill that buys my grain? No, because he will simply import what he needs."

Proof of impact is our best chance to create additional public or private income for farmers, as we've already seen with our water premiums. Realising the consumer value of quality food from nature rich landscapes requires a traceable supply chain. This too has costs. There has been no shortcut to making a supermarket loaf traceable all the way back to the farmers that grew it. It has required investment in the infrastructure of separate storage, milling and processing, and collaboration with the incredible expertise within the current food system to try and build one that delivers for farmers, food buyers, and nature.

Wearing a getup that my son described as "Henry VIII meets Peaky Blinders," I had the honour of receiving an honorary fellowship from the Royal Agricultural University last month.

The RAU was founded because farmers were struggling with low agricultural prices and a lack of government support. Well, nearly two centuries later, here we are again. An economic system that conflates value and importance is shown in farm gate prices that are often below the cost of production. Less than 50% of farmers have any kind of Sustainable Farming Incentive agreement. The mental health of UK farmers is worse than that of any other trade. Across farming, as in other key areas of our society—healthcare, social care—the show goes on because of big-hearted, brave, and passionate people.

In one of endless anecdotes from the colourful life of Bobby Boutflower, a legendary RAU principal between 1931 and 1958, he railed against the shortcomings of stock breeders, saying they were like shipbuilders for their lack of imagination in looking to nature for solutions. "Look at what the shipbuilders have done," he said. "They build their ships sharp at the bows and blunt at the stern. They never thought to look at a whale that is blunt at the bow and sharp at the stern. And in consequence, we've had our ships going arse first for 2000 years." Farming is in a difficult place, but there is a way out. The last five years have demonstrated the power of collaboration, and, like Bobby, keeping an open mind and always asking "why?".

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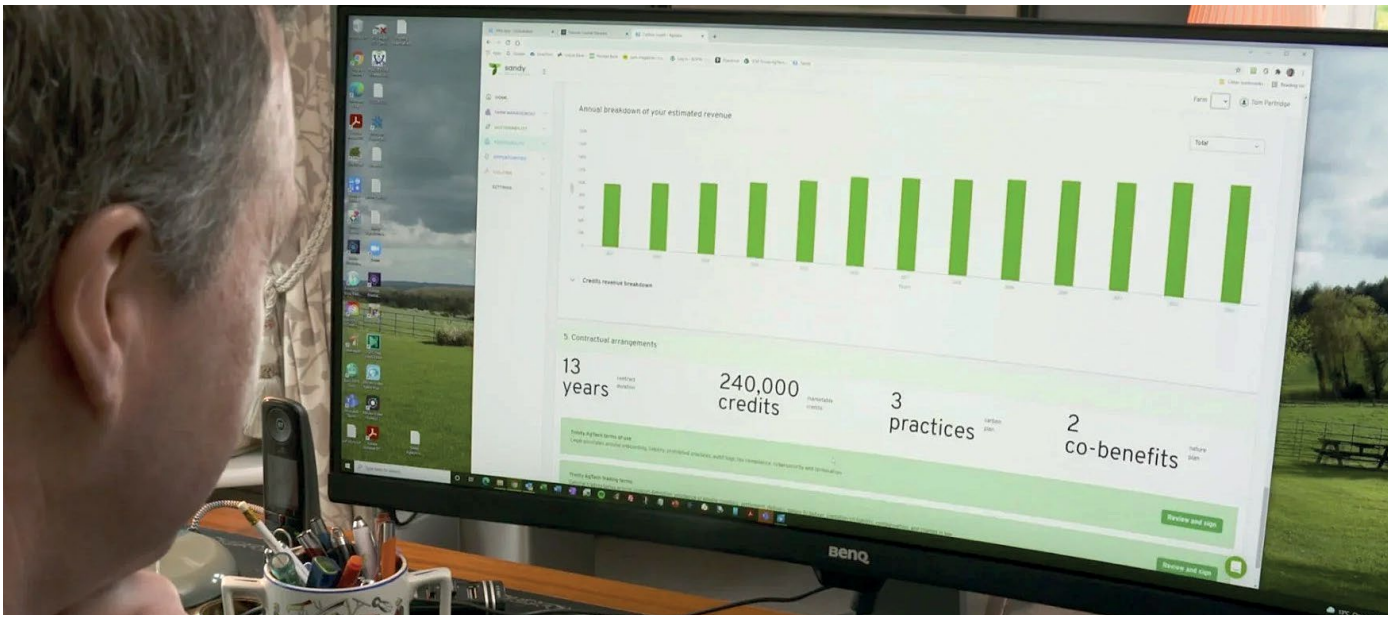


THE FARMS THAT WILL THRIVE IN THE NEXT DECADE, AND HOW TO BUILD ONE

Written by Kiera Holland from Trinity AgTech

Climate instability, market volatility, and supply chain shocks aren't coming, they're here. The farms that weather them will be the ones that built resilience into their soil, water systems, and financial models. Not to just endure, but to farm well: with margin, with options, with a business that actually works.

When half your neighbours couldn't drill last autumn because the heavy land never dried, could you?

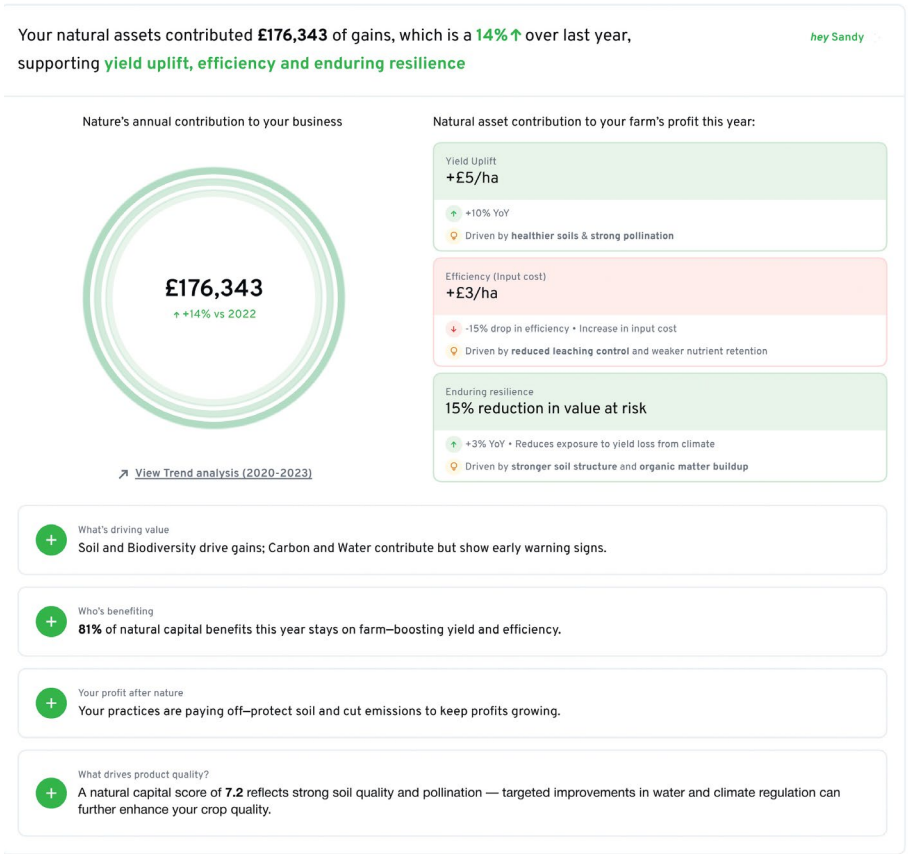
When fertiliser prices more than doubled, could your farm maintain lower input costs while maintaining yield?

When the drought hit in July, did your wheat still fill?

These aren't hypothetical questions anymore. The farms that handled those shocks better aren't just surviving, they're farming profitably while their neighbours bleed cash on emergency inputs, failed crops, or fields they can't even access.

That's not luck. That's soil that holds water. Nutrient cycling that doesn't collapse when input prices spike. Water management that keeps fields workable when others flood. Ecosystem function that stabilizes production when weather patterns break.

But here's the problem: You've never been able to see it all in one place. You know your yield maps and input costs. But you've never seen your soil health,



water management, carbon stocks, and biodiversity functioning on the same page as your bank balance.

You can't answer the questions that determine your farm's future: What will your natural capital look like in five years? If you shift to reduced tillage or integrate cover crops, what's the actual impact on your ecosystem services and your bottom line? Which practice changes deliver the highest return?

Your agronomist knows the practices are working. But when you ask "What's the financial value of the natural systems I'm building?" there's been no answer you can take to the bank. No measurement with scientific rigour. No adherence to international standards that hold up when lenders, insurers, and premium schemes write cheques. Just marketing claims and inconsistent unverifiable methodologies.

That's the gap that's cost you visibility, and likely money.

You can't manage what you can't measure. And right now, you're managing the natural capital that determines your farm's future with no instruments at all.

Understanding What Your Farm's Natural Systems Are Already Doing

Sandy helps you see what your farm's natural systems are already doing, and where you can strengthen them. It brings together your agronomic data, financial projections, and natural capital metrics under a single framework. Not as corporate jargon, but as a practical answer to a simple question: What is your farm actually worth, and is that value going up or down?

You already measure machinery depreciation and seed ROI. Sandy lets you measure your soil structure, water-holding capacity, and carbon stocks the same way, as assets that either appreciate or degrade, and that directly affect your bottom line.

The approach recognises that your farm generates value across four critical areas: Soil Health, Nitrogen & Water Management, Carbon Sequestration, and Biodiversity. These areas are deeply interconnected. When you improve soil structure, you simultaneously improve water-holding capacity, reduce nitrate leaching, increase carbon sequestration, and support biodiversity.

The Sandy NCVM, Natural Capital Management Module integrates your existing data with satellite monitoring and natural capital assessment built on internationally recognized standards. You see which fields are improving fastest, where to focus effort for the best return, and what your ROI is on organic matter gains. You can model scenarios before you commit capital. When premium contracts, carbon schemes, or improved financing become available, you have the documentation ready.

This isn't measurement for measurement's sake. It's decision support. It's knowing where to invest your time and money for the highest return. It's having evidence that your farm is getting stronger, not weaker.

And if that measurement also positions you for SFI payments, premium contracts, or carbon revenue? That's a

side benefit of good farm management, not the reason to do it.

The resilience itself is what keeps you farming well.

What That Resilience Is Actually Worth to Your Bottom Line

At 4% soil organic matter, a medium loam holds over 80mm more plant-available water per hectare than at 2%. That's roughly two weeks' worth of summer rainfall in East Anglia. In a dry July, that's the difference between 10 tonnes per hectare and 7. That's the difference between profit and loss.

When fertiliser prices spike, farms with active soil biology need 20-30% less synthetic nitrogen to hit the same yield targets. At £450/tonne for ammonium nitrate and typical application rates of 200 kg N/ha, that's £50-£75/ha you're not spending. On a 200-hectare farm, that's £10,000-£15,000 staying in your account every season. Your cost structure doesn't break when global supply chains hiccup.

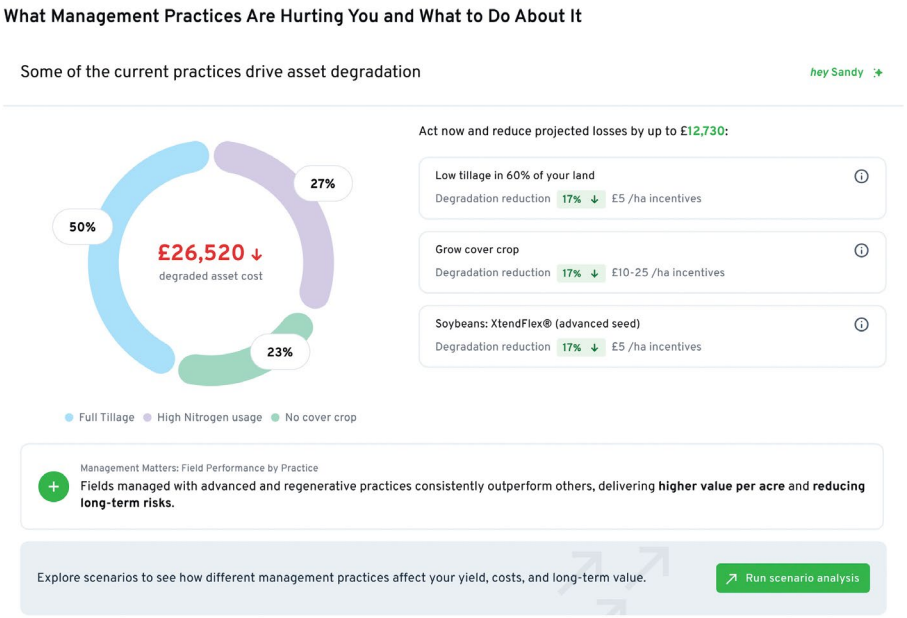
When you get 100mm of rain in two hours, soil with good aggregate stability stays in place. Degraded soil ends up in the ditch, along with your topsoil, your applied nutrients, and years of accumulated fertility.

These aren't environmental benefits. They're business sense.

Your input costs don't spike as hard when markets convulse. Your yields don't crash as hard when drought or deluge hits. Your fields stay workable when neighbours can't access theirs. That resilience shows up in your bank balance every season, whether or not anyone pays you a premium for it.

The practical decisions that build this: Switching from plough to shallow non-inversion might save £35-£50/ha in red diesel and labour. Add better water infiltration, and you're also protecting yield potential in a wet season. Integrating clover or cover mixes ahead of spring barley builds nitrogen and soil structure. Optimising nitrogen rates with leaching-risk indicators cuts waste, improves margins, and keeps nutrients where crops need them.

How the system works: Better soil structure means water infiltrates instead of running off. Nutrients stay available instead of leaching. Your fields stay workable when others turn to mud. That structure comes from carbon sequestration building organic matter, which feeds biological activity, which cycles nutrients and regulates pests. Hedgerows and margins aren't nice-to-haves, they're functional infrastructure that buffers risk.



These aren't separate systems. They're integrated. When you improve one, you strengthen the others. When you neglect one, you undermine the rest.

What's Emerging and Why You Should Be Positioned

Resilience isn't just good business, it's increasingly what new SFI actions and supply contracts are rewarding. Whether it's reduced tillage, companion cropping, or nitrogen efficiency, the ability to show outcomes is becoming part of market access.

Some mechanisms that reward resilience are starting to deliver. Not everywhere. Not reliably. Not at scale. But they're real.

Supply chains increasingly require verified metrics, not just practice claims. Premium contracts reward farms that demonstrate stable production under stress. Agricultural insurers are realizing that farms with better soil health have lower claim rates. Private lenders want to know your soil organic matter level. Farm valuations are beginning to treat documented sustainability metrics as balance sheet assets. Carbon aggregators are facilitating payments to farms with baseline data. These are exactly the outcomes SFI and emerging schemes are designed to support.

These mechanisms might accelerate. They might stall. They might take five more years to mature in your region.

But even if none of them ever pay a penny, the operational resilience still makes business sense. The measurement still makes you a better farm manager. The improved soil, water, carbon, and biodiversity still deliver better yields under stress and lower input costs.

Everything else is upside.

The farms thriving in the next decade won't be the ones that filled in the forms. They'll be the ones that actually built resilience when it mattered and can prove what they've done when opportunities arrive.

The Farm Your Children Can Actually Inherit

Your grandfather built soil fertility with muck and good rotation. He knew when it was healthy and when it was struggling. He knew which fields held water and which ones didn't. But he couldn't prove its value to a bank, a buyer, or a premium scheme.

You can prove it with data. The principle's the same, the tools are new.

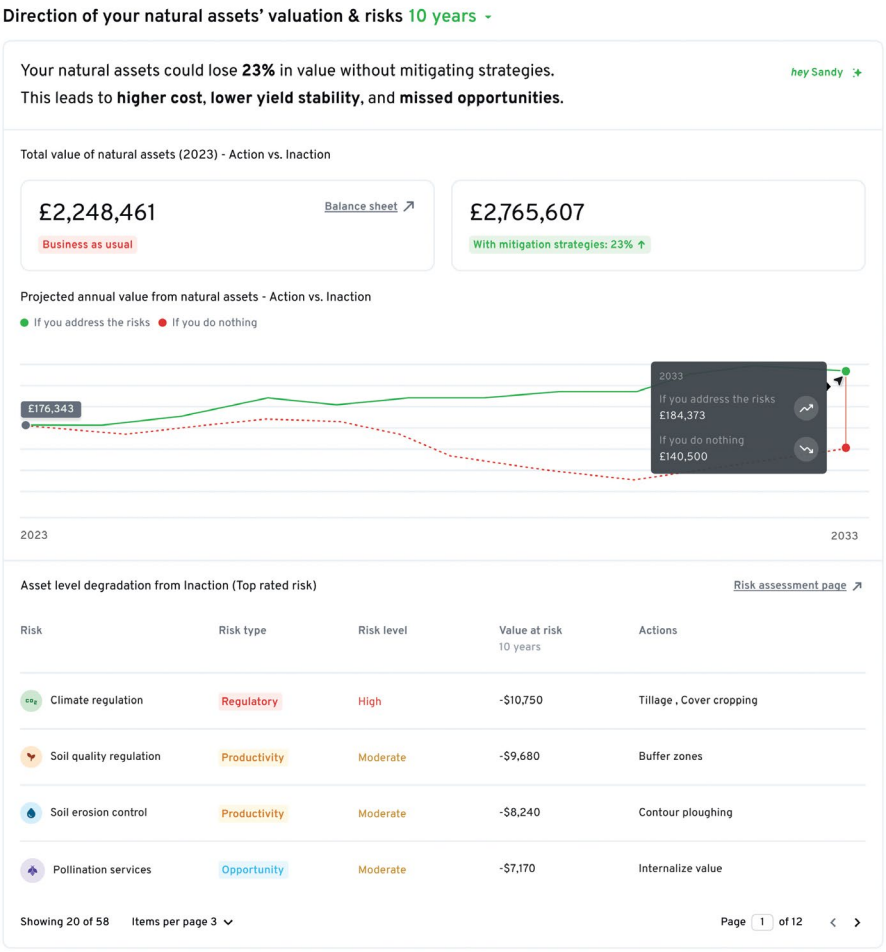
Twenty years from now, the viable farm will be the one that built resilience when volatility was accelerating. That had soil capable of holding water through drought and draining through deluge. That maintained the biological systems

DALE DRILLS

Don’t miss out on Dale Drills' exclusive hire and demo opportunities this Autumn!

If you're interested in trying a **No-Till Tine Drill** on your farm, contact Dale Drills now.

We have a **6m Eco M No-Till** drill available for demonstrations this autumn. For more information, contact us at **01652 653326** or visit www.daledrills.com.



that buffer against pest pressure and stabilize nutrient cycles.

The fact that you documented that resilience along the way? That positions you for opportunities others won't have access to. Premium contracts. Carbon revenues. Better financing. Farm valuations that reflect the actual value of healthy natural systems.

But the resilience itself, that's what keeps you farming.

Your farm will thrive in the next decade if you start building, and measuring, that resilience today. Not just for carbon credits or premiums, though those matter. Because resilience isn't an environmental luxury, it's what keeps your margins alive when markets move and the weather doesn't.

That's the farm your children can inherit.

See what your natural capital is actually worth. Sandy's NCVM brings your agronomic data, financial projections, and natural capital metrics onto one page, so you can measure resilience, model scenarios, and make better decisions about where to invest your time and money.

Scan the QR Code for more information

trinity AGTECH

CoolEarthCoin - When Growers Create Markets for Each Other

Cool Zero CO_2, a Spanish fruit company, issues CoolEarthCoin (CEC), a blockchain-backed digital currency, using Trinity's blockchain, where each coin represents 50 kg of verified CO_2 sequestered through regenerative agriculture. When consumers buy their fruit, they receive CECs. Every purchase becomes a direct contribution to carbon removal.

But here's what matters for UK farms: Cool Zero doesn't just measure carbon on their own orchards. They buy verified carbon credits from other regenerative growers to bundle with their produce, creating a marketplace.

The verification is what makes it credible and bankable: Trinity NCM methodology, adhering to Tier 2/3 IPCC standards, ISO 14064 compliance, and blockchain registration. No gimmick calculations. No pseudo-scientific estimates. Internationally recognized standards that command real prices because the science holds up to scrutiny.

A farm sequestering 10 tonnes of CO_2 annually through practices like cover cropping, reduced tillage, and integrated nutrient management generates 200 CECs. Cool Zero buys them at €5/coin, €1,000 for verified outcomes.

This is the model that could scale: Growers building resilience. Buyers willing to pay for verified carbon to differentiate their products. A measurement layer built on rigorous science that connects the two.

It works for Spanish fruit farms buying from regenerative growers across Europe. Could UK processors do the same, buying verified carbon from their wheat, barley, or potato suppliers to bundle with their products? Would retailers reward the farms in their supply chains that are genuinely building soil carbon?

The farms positioned to benefit won't just be documenting their practices. They'll be the ones delivering measurable outcomes verified to standards that matter.

Scan the QR Code for more information

Here's a bigger idea

A NEW drill that delivers perfect seed and fertiliser placement

IDEAS FOR OUR FUTURE

They say size isn't everything, but the Condor 02 direct tine seed drill - available in 8 and 9 metres - delivers both scale and smart innovation.

Its 4,100-litre triple-chamber hopper enables precise drilling of seed and fertiliser combinations and with the ConTeC pro tine coulter, now with automatic pressure control, ensures consistent seed placement and furrow closure, even on hilly terrain.

Choose 20 or 25 cm row spacing for faster canopy closure and better weed suppression. MultiSwitch single-row control reduces overlap and boosts efficiency - saving time, seed and money.

Amazone - from Stubble to Harvest.

*The **NEW** Condor range - in working widths of 8 and 9 metre. Triple hopper size 4,100 litres (50% | 30% | 20%)*

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FARMER FOCUS
TIM PARTON

So nice to be looking towards the 2026 cropping and putting 2025 behind us. I think that the '25 cropping will be remembered for all the wrong reasons for quite some time and it's one we hope won't be repeated!

Can you believe that we are talking about next year's cropping already? Where has the year gone? I saw my first Christmas advertising of the season this September — it only seems like yesterday we were taking the decorations down!

Crops performed better than I expected here, but they were still down from our normal average — by 25%. However, it could have been worse and I had also kept inputs down, so there was a margin for profit. Spring beans was by far the worst crop, as they especially need water to help them prosper and that was something the farm kept missing out on. On several occasions rain was forecast for the area, but when it was due, the rain showers I could see in the sky seemed to skirt around us.

Another season brings a fresh set of challenges. One to meet head on is to ensure that nutrition is balanced in the crop from the outset. This starts us out on the front foot by keeping pests and disease at bay. No crop becomes ill or is attacked by chance; there is always a reason for decline. We finally got rain in early September and cover crops are motoring on now. As the year is moving on, I have foliar fed some of them and that investment will pay dividends for the carbon bank and the following cash crop. As we still have fairly long autumnal days, cashing in on that sunlight must be the priority for me, aimed at maximising efficiency for carbon sequestration and ground cover.

I have a little giggle when I hear people say that regen farming is just a passing phase! Do they really think that we can continue mining fossil fuels and applying poisons to our land? I have read a few papers that report that residues of pesticides have remained in soils for years, even decades, and where land has been converted into organic, the residues remain many years after the last application. I often feel that these residues have a particular impact on cover crops on the farms that have used high rates of herbicides for many years, meaning that biology has been dramatically inhibited and said chemicals cannot be broken down. This just leads to degraded soils moving forward. We cannot continue to farm in that direction, turning a blind eye and hoping that the problem is going to go away.

I understand the financial pressure that people are under and sometimes we must make decisions that we would sooner not have to make, but to just bury your head in the sand and think the problem is going to disappear is madness to me. As Einstein is believed to have said: "Insanity is doing the same thing over and over again and expecting a different result." All soil ever wants to do is heal. The problem is that human beings always think they know better and want to control the situation, which we have made a complete mess of in the short time that we have been on the planet! We must come up with a system where we can farm in harmony with Mother Nature and not fight against her.

With pesticide use rising by 25% from 2.8 million tonnes in 2010 to 3.5 million tonnes in 2022, is that a sign that pesticides are working? Or has their use risen due to the lack of results obtained? Has yield or profitability gone up in line with this rise? In my mind, most have gone backwards! So, isn't it time that we as farmers come up with a system where we are far less dependent on synthetic inputs? It does take a determined focus to achieve this, but it's well worth the effort. Once you have a working soil, the whole farm ecosystem responds! It all starts with getting your soil working and, subsequently from there, everything flourishes, including profitability.

At Green Farm Collective, we have had a busy year and are still working hard to secure buyers of our wheat, offering a premium back to the grower. I really feel that this is another issue where we need to stand together and not let regeneratively produced food be sold without a premium back to you on farm. Regardless of who we are selling to, if we sell ourselves short now, it will be a difficult one to resurrect. We need to endorse regenerative farming and be rewarded and applauded for contributing to the numerous, sustainable benefits that come from farming this way. Benefits to the planet and benefits to the future generations. The clock is ticking, and people deserve to have the choice to buy and consume food produced in a manner that is nutritious to them and generations to come, while still having a planet that is inhabitable and productive.

Our first load of the season was delivered to the mill in early September, which felt like a great victory to all of us at GFC. Our flour is distributed and sold by Eurostar commodities and has been nominated for the prestigious Sustainability Initiative of the Year award at the Baking Industry Awards 2025. This is a nomination that we are all very excited about and so proud to be recognised for after all the hard

work that we have done and continue to do running along with Eurostar commodities. Like all things in life, the more effort you put in, the more you get out. Life is what you make it.

Lastly, in early September, I was very fortunate to be invited to speak in Jersey at a new rural community event organised by India Hamilton and Taylor Smythe. It was superbly hosted by the Le Tacheron family, who also ordered up some wonderful weather for the few days. I, along with Andy Neal and Ian Wilkinson, was invited to speak on the great debate of glyphosate vs tillage. We have given this talk many times, including at Groundswell last July. It always stimulates heated discussion, especially from people who are dogmatic stalwarts of the plough. We had plenty of those in the audience, since we all know potatoes are the main crop in Jersey, where some are growing continuously! Personally, I think that shallow ploughing, if necessary, is not a big evil if there is a legitimate reason for doing so and only done in a long rotation.

However, soil health is always my

top priority and as proved in the trial done here for the glyphosate trial, not disturbing the soil results in retention of carbon, less nitrous oxide emissions and a stable structure. Over the period of three weeks, we could see the glyphosate was degraded and not held within the soil. Porosity of the soil was more stable with not moving the soil, whereas the high tillage piece had slumped after three weeks, which is what I would have expected. That was starting with a high biological soil, which broke the glyphosate down quickly. If results had been different, I may have looked at that thing called the plough. (Not on your nelly!) Additionally, I feel that the results would be totally different in a non-biological soil, where glyphosate would be hanging around for far longer.

Jersey is a lovely island, and I met some fantastic people – thank you for looking after me. We just need to take their ploughs off them and let what soil they have recover! With Jersey being such a small island, it could easily be the flagship of the world on how to farm in harmony with Mother Nature. It could lead the way developing working soils along with their clean air and water, but as with the rest of the UK, it will take a unified and concerted farming desire from us all to keep nutritious food supplied to the nation and the rest of the world.

THE BATTLE FOR A BALANCED BIOME SOIL

Increasing protozoa activity and enabling plants to efficiently utilise nutrients released by that protozoa development, is crucial for nutrient cycling and soil fertility, according to independent soil microbiology analysts.

"Protozoa are the key indicator species for a well-balanced, biologically healthy biome, which interacts beneficially with the crops being grown, and are essential for earthworms to flourish," says Nick Cooper associate consultant with SoilBioLab, a soil and microbiology testing, analysis and advisory facility, based at Andover Hampshire.

This belief is based on evidence from thousands of soil samples, analysing the microbes in the soil covering bacteria, fungi, protozoa and nematodes. This includes research looking at demonstration crop plots at the Cereals event over the last three years, with plots treated with bio-stimulant products from British bio-technology business, AminoA.

A number of independent university-based trials have shown that the absence of protozoa in soil can halve the numbers of active earthworms, and all the benefits they bring, such as nutrient cycling, improving soil structure, enhanced water infiltration, improved aeration and providing a food source for birds and soil invertebrates.

Richard Phillips

Samples taken from the Cereals event demonstration crop plots, suggest that reducing soil applied nitrogen and providing non-toxic nitrogen in the amine form, through applications of an innovative bio-stimulant product, can help create a favourable environment for protozoa development.

AminoA's revolutionary hybrid bio-stimulant, BLAAZT, helps to short-circuit the natural growth process by harnessing nitrogen in its amine form, while also combining amino acids to create an extremely efficient means of introducing a concentrated form of nitrogen into the plant.

"By harnessing the amine form of nitrogen, normally only produced and found in the plant itself, AminoA BLAAZT helps improve yield and quality in all crops. It also reduces the risk of environmental pollution from the run-off of easily leached chemical fertilisers," says Richard Phillips, managing director of AminoA.

A key feature of AminoA BLAAZT is the significant role it has in not only reducing soil-applied nitrogen inputs, but also in enhancing the production of protozoa. The Cereals plots (OSR, Triticale and Winter Wheat) have been treated with a zero, 70kg/ha and 150 kg/ha of artificial nitrogen, alongside treatments, against a control (220kg/ha N).

"We have sampled and analysed soil biology of the AminoA demonstration plots at Cereals for several years," continues Mr Cooper.

"Generally, the soil samples from the Cereals demonstration plots in 2024 on the AminoA site were not great regarding a well-balanced

active biome. The zero and lower N rates showed a better-balanced microbiome, with the 70 N plot showing the most active protozoa which, as previously stated, we regard as the key indicator species and are crucial in releasing nitrogen back to the plant and providing a stable nutritious feedstock for earthworms," he explains.

According to Mr Cooper, the very poor results biologically with the zero N plots were probably due to the microbes not getting enough 'food' to encourage a very active rhizosphere, hence the resulting unbalanced soil biome.

"The indication from the AminoA demo plots was that their products worked well with an optimised soil biome and helped to maintain yields as nitrogen rates were reduced," he says.

"The high N rates of 220kg/ha, and Standard Farm Practice (SFP) results, were very typical of a microbiome being overwhelmed by both high fertiliser rates and negative impacts of cultivation and pesticides.

"A combination of lower rates of nitrogen and use of the AminoA products suggested that the protozoa numbers could be enhanced whilst still maintaining high yields in wheat," he continues

The current SFP for broadacre crops does not take into account the health of the soil biome, which is key for a truly sustainable growing system. That is why Mr Cooper alongside Simon Parfey of Soilbiolab (www.soilbiolab.co.uk) are working with companies, such as AminoA, to optimise the soil biome whilst maintaining crop yields.

"AminoA's range of products are a crucial part of developing the next generation SFP, as it can be argued that the current SFP is unfit for purpose, regarding a high output sustainable growing system for the 21st century," confirms Mr Cooper.

Formulated to mix with most agrochemicals, improving their efficiency, applying BLAAZT can result in reduced field operations, while significant amounts of the crop's nutritional requirements can be delivered simultaneously.

"Soil microbiology results have been consistent over the last three years on our Cereals crop plots, where Mycolife has analysed the samples, and we plan to repeat the trial this year at Leadenham," says Mr Phillips.

"Our results have shown that a combination of AminoA BLAAZT with 150 kg/ha of soil applied nitrogen (as urea), produced the highest populations of Ciliates - protozoa that are especially sensitive to soil moisture. This suggests the treatment created significantly more root mass," he adds.

"By incorporating AminoA BLAAZT into their practices, farmers can optimise nutrient utilisation, support sustainable agriculture, and minimise the negative impacts of excessive nitrogen inputs. This approach enhances plant nutrition and promotes a healthy soil microbial community," he concludes.

BIOSTIMULANTS

OFFER A PROVEN ALTERNATIVE TO FERTILISER OVER THREE YEARS OF ON-FARM TRIALS

When phosphate prices rocketed three years ago, Cambridgeshire arable farmer Russell McKenzie faced the same dilemma as many growers: how to maintain crop performance while keeping a lid on input costs. Instead of simply absorbing the rising cost of Diammonium Phosphate (DAP), he decided to test whether biological alternatives could take its place.

"This led to a three-year project comparing the farm's standard 200 kg/ha DAP programme with 1 litre/ha of Luxor as a phosphate source in the first year," explains Russell. "In years two and three, the approach was adjusted to 0.5 litres/ha of Luxor combined with 0.5 litres/ha of Calfite Extra to improve nutrient use efficiency in second and third wheats," he says.

Across all three years, the results were consistently as good as – and often better than – the conventional DAP programme.

"We started this work to reduce reliance on expensive fertiliser," says Russell. "Three years on, I can say with confidence that Luxor and Calfite Extra perform as well as – and often better than – standard DAP. The added bonus is we're achieving it at a fraction of the cost."

In the first year, Luxor alone outperformed DAP, giving an extra 0.9–1.3 t/ha yield on first and second wheats and in years two and three, Calfite Extra was introduced on second and third wheats. These combinations continued to deliver, with yield increases of 0.65–1 t/ha in year two, and 0.65–0.7 t/ha in a more challenging third year.

Tramline strip trials took place across five fields covering around 70 hectares, and the work has shown that biological products can replace fertiliser inputs without compromising output.

Behind the numbers is a biological system that improves how plants use nutrients already present in the soil. Luxor supplies key nutrients in a highly available form, while Calfite Extra helps to release phosphate bound in the soil and supports root growth.

NDVI image from 2023, the dark green is Luxor treated at 1 lha & untreated either side of it

Tissue analysis of the trial plots revealed nutrient levels were consistently 20% higher in treated plants from T0 through to flag leaf stage. "Early application is key: applied in winter and followed in spring, the products stimulate rooting, boost photosynthesis and improve the plant's own ability to capture and use nutrients," explains Andrew Cromie at Unium Bioscience.

"In the first six to eight weeks of a plant's life, it takes up 40-50% of the phosphorus it will need. If you get nutrition right at that point, you set the crop up for the rest of the season.

Russell McKenzie

Luxor and Calfite Extra improve nutrient use efficiency by making more nutrition available to the plant and helping it take it up. Stronger roots drive photosynthesis, which pumps carbon back into the soil, unlocking yet more nutrition."

This creates a synergistic cycle: the crop feeds itself more effectively, while also stimulating soil biology. The result is stronger roots, more tillers, and ultimately, more biomass – factors that correlate strongly with higher yield.

"We've now introduced Luxical, a product that combines both Luxor and Calfite Extra," adds Andrew.

Agrovista agronomist Phil Warham says that more farmers are now adopting Luxor, Calfite Extra or the new Luxical as part of their standard crop nutrition strategy. "What we're seeing here is how Luxor and Calfite Extra can complement conventional nutrition programmes by improving nutrient use efficiency and crop resilience.

"They help the plant make better use of what's already in the soil, while supporting rooting and photosynthesis at key stages. For growers, it's a sustainable, practical option that fits seamlessly into existing programmes and supports long-term soil and crop health," says Phil.

For McKenzie, the economic case is just as important as the agronomy. At £14/ha for Luxor compared with £130/ha for DAP, the savings are clear. With carbon benchmarking now a feature of his business, reducing fertiliser applications also helps cut emissions.

"Margins are being scrutinised more closely than ever," he says. "We need to be efficient with every input. These products give us confidence that we can farm at low P indices without detriment to yield.

"The products are also easy to adopt. Both are tank-mixable with other sprays and fit neatly into existing programmes," he says.

The project has given Russell the confidence to continue reducing conventional phosphate use while maintaining output. With fertiliser prices still volatile and scrutiny on nutrient use increasing, he believes biologicals will have an important role in future farming systems.

"After three years of consistent on-farm results, it's clear this is about more than just cost savings – it's about growing more resilient, efficient crops. Luxor and Calfite Extra have proven their value. We now use Luxor plus Calfite Extra to supply phosphorus and strengthen rooting in the autumn, alongside a straight 30 kg/ha A/N application. The cost works out at around £47/ha for the three products, compared with £118/ha for DAP."

WHY DE-RISKING THE FINANCIAL BURDEN ON FARMERS WILL UNLOCK **SCALING REGENERATIVE AGRICULTURE**

What needs to happen for regenerative farming to be commercially scaled and expanded? A panel at the recent World Agri-Tech Innovation Summit gave their views

Written by Mike Abram

Attempts to scale regenerative farming practices through the value chain must de-risk the financial transition for farmers, key representatives from major companies across the agri-processing, food, retail and finance sectors agreed during a panel session at the World Agri-Tech Innovation Summit.

The business case was very important in persuading farmers to transition, stressed Ben Makowiecki, Lloyds Banking Group agriculture sustainability director. "There are lots of case studies on the environmental impact [of regenerative agriculture] and benefits to nature and biodiversity, but many fewer cases which are fully costed out and where farmers are willing to show what it means to the bottom line.

The Regenerative Agriculture Panel.

Ben Makowiecki, Lloyds Banking Group agriculture sustainability director

"Farmers are not a conventional farmer on day one and on day two a regen farmer," he continued. "There is a long tail to transition, it might take 10-15 years for the benefits to come through, and we don't have that many cases of farmers doing this long term yet."

While there were definite immediate benefits in terms of fuel, and maybe fertiliser and input savings, he said, there were risks and potential yield drops as well. "It's how do we get yields back up over a period of time, while keeping that resilience in terms of environmental benefits and reduced inputs, but see the profitability come through as well."

For commercial companies, the environmental benefits created the backdrop for their interest, ADM's Ismael Roig added. "But ultimately there needs to be an economic benefit to all,' he stressed.

Ismael Roig, ADM

In the US, ADM's regen programme, which now covered approximately 2m ha – about the size of Belgium – had been built around incentives, he said. "We've been providing farmers with $40/acre (£75/ha). The average farm in the US is roughly 500-600 acres, so they're getting $20,000-$30,000 (£15,000-£22,500) and that's what supports first move into regen ag."

Those payments were linked to customers such as PepsiCo or Mars with the benefit of reductions in associated Scope 3 greenhouse gas emissions.

"If you can't link all of the value chain elements with an economic purpose, it is very difficult to get farmers to participate in the programme," he said.

Such programmes were easier to run in the US than in Europe because a common standard could be applied across a large area, he added.

ADM had formed a joint venture with Farmers Business Network called Gradable that certified farmers in its regen ag programme, he explained. That used the well-established standard "Field to Market".

"The ability for the farmer to know they can come to one institution, where they can put their land to the standards required by Field to Market, and then being able to sell [products]

with a guaranteed value into the platform has made a huge difference in how quickly we've been able to scale this programme."

In contrast to having one standard that could be applied at scale in the US, in Europe, ADM was having to deal with different systems and different standards in different countries.

"In Europe, we've had to establish different partnerships in every country, for example with Map of Ag in the UK, and tweak the standards to get a convenient resolution."

He called for a clear definition of standards to be agreed in Europe. "We need to operate with a standard, a clear definition of what are the components that will address carbon sequestration or carbon reduction. Ultimately the companies we are selling to, Heineken, PepsiCo, Mars, are looking to reduce their scope three emissions and meet their private sector commitments and responsibilities."

While standard definition probably needed government intervention, financing scaling initiatives had to come from the private sector. "That's how you jump start it. After the first phase, you need to move to an outcome-based programme. There needs to be clear targets for the farmer to meet for which they can be compensated for producing that benefit."

Frameworks such as that developed by SAI (see panel) could be used to achieve this, he suggested.

Companies had to move away from just an income-foregone model, Ben stressed. "The risk for far too long has been on the shoulders of the farmer and I think the value chain has to take that risk away from them.

Rozanne Davis, SAI

"We need the ability to de-risk the transition, so we can say to the farmer, you look after your practice changes, and we look after your bottom line, your profitability, so that if there is a weather issue, the risk is not on you, it's on the value chain."

Insurance companies needed to be part of the conversation, he added. "They are the experts in de-risking, but at the moment they are not part of that conversation. One of the major benefits of this change is going to be flood risk management, and one of the biggest beneficiaries will be the insurance companies in terms of property, infrastructure, etc."

While clarity over definitions would be helpful, Joseph Keating, Senior Agriculture & Fisheries Manager at Co-op, said that farms usually had multiple outputs, which meant companies had to step outside of their silo thinking.


Joseph Keating, Senior Agriculture & Fisheries Manager at Co-op

"We want our farms to being resilient and sustainable in the long term. That isn't about one standard that some farms achieve. It's about a set of rules, regulations and standards all farms achieve. If there's a subset doing more, that's brilliant, but that doesn't help the whole system."

He said the transition was being well-financed, but only in pockets. "How do we start joining some dots?" he asked. "It's not just a money issue, it's how we use it better."

One example of trying to do that was Soil Association Exchange, which the Co-op had joined alongside other retailers, food business and banks, including Lloyds.

"The benefit of Soil Association Exchange is in spreading collaboration by pooling the funding and also sharing benefits across the supply chain," Joseph explained.

"And it is a payment to the farmer, and it puts them in control. They decide what they want to be involved in, the level of engagement, targets and objectives."

There was a cost to the farmer, Ben said, in providing data. "We're all after data and have slightly different requirements. We have customers that told us they have 25-30 different audits on the farm each year.

"But the more we collaborate, the more supply chain value can come together and we can request data from farmers with one voice, the more work it will take away from them," he concluded.

What is the SAI 'Regenerating Together' Framework?

The Sustainable Agriculture Initiative Platform (SAI Platform) 'Regenerating Together' framework was developed by the agri-food industry to help align regenerative agriculture principles and encourage their adoption within the food chain industry.

Launched in 2023, after being developed by 33 of its members, including PepsiCo, Diageo, AB Sugar, McCain, Kellogg's, Nestlé, Cargill, McDonald's, Coca-Cola, Arla, Bayer, Syngenta and Yara, it's used to monitor, measure and track a farm's outcomes in four key areas of impact – water, soil, biodiversity and climate.

For a farm to be considered an 'engaged regenerative farm' is has to be identify key risks in those four impact areas, select appropriate mitigation outcomes and embark on a continuous improvement plan to address identified risks.

To be considered a "regenerative farm", the farm also has to report improved performance in at least two impact areas.

FARMER FOCUS
JULIAN GOLD

It is a year since my last piece in Direct Driller and what a year it has been!

On the back of a reasonably good previous financial year and with the prospect of BNG money hitting our bank account, we decided to spend over half a million pounds and invest in a new dryer and handling equipment to finish off the new grain store building that we put up a few years ago.

So far so good, but as we hit late spring 2025, the wheels started to drop off. Progress with grain plant install was a bit slower than anticipated and the continuing drought meant that Harvest '25 was obviously going to be much earlier than usual. To compound this stress, the progress of obtaining a Section 106 legal agreement for our BNG scheme was happening at a painfully slow rate. (A S106 is needed to register as a BNG site and enable sales of units to happen.) In the end it took a year to obtain the agreement!

The black hole that was opening up in the cashflow (and the prospect of it getting worse after harvest, as by this stage it was becoming apparent that yields would be significantly down), was, in hindsight, beginning to cause me raised stress levels.

This was further compounded by personal issues and the whole situation was responsible (I believe) for me falling from a height doing something really stupid, in contravention of my own Health and Safety risk assessments. The accident could have been fatal but luckily I got away with a sore head for a week or so and an artery bypass graft in my left arm.

The knock-on effects of the accident proved extremely stressful to everyone in the business, from my colleague who had to deal with it at the time to the owners of the farm who are ultimately culpable for Health and Safety breaches. The Health and Safety investigation was thorough and draining and not something I would wish to repeat.

I would urge any of you who are responsible for Health and Safety in your businesses to ensure that your systems are robust and legal compliance is complete. It is very easy to overlook small things that can be HSE breaches, such as not wearing seatbelts in UTVs. Do you check your ladders quarterly and log the results? Are your electric roller shutter doors inspected every six months? Do you use LOLER-tested man cages for planned jobs? (These should only be used in emergencies, otherwise it's ladder or hired cherry picker!)

Some of the HSE rules and guidance are impractical in my opinion. For instance, it is safer to clean gutters using a man cage on a telehandler than it is to climb a ladder and carry out an awkward reach. But unfortunately, we are bound by present rules.

Moving on to cropping matters, Harvest '25 was a mixed bag. We only had 36.5 mm of rain in the main growing period of April to end of May. Hybrid Winter Barley yield

was down but not by much and confirms the reliability of this as an important crop in the rotation. Winter OSR yields were very good at around 4 t/ha and were not affected by the drought. (Note: my yield figures are only approximate until crops are sold.) Winter wheat, however, was down by about 25% from our usual average of over 10 t/ha to probably around 7.5 t/ha. As our main crop, this will have a massive effect on our cashflow, particularly as the prices are currently below budget levels too.

Winter bean yield was fairly catastrophic at around 2 t/ha. Luckily, we did not grow Spring Beans this year, as that part of the rotation has been switched to NUM3 legume fallows. This integration of environmental crops into the rotation has certainly helped de-risk our cropping operations slightly as NUM3 payments are unaffected by drought! Having said that, I have reduced NUM3 areas by 50% going forwards as I have come to the end of any honeymoon period I felt about SFI and am looking forward to the day that my four, complex, multi-start date, problematic, management-time-sapping SFI agreements all end!

Looking at harvest results generally, it seems that farms using lots of organic manures have benefitted in this drought year. A neighbour of ours who uses lots of sewage sludge had a particularly good harvest and comprehensively outyielded us, although he is on similar soil type and had similar rainfall levels. I am thinking that maybe the availability of organic N in the sludge early in the crops' growth in the spring allowed for better tiller retention compared with our crops fertilised with inorganic N, which may not have been utilised well enough in the dry conditions. Our ear numbers per square metre were definitely down compared with the neighbour's crops and were the main reason for the poor yields this harvest.

After years of careful management, we are operating with reasonably high organic matter levels in our soils and this means that in theory there is a vast amount of organic N

in our soils for crops to utilise (eg a field with OM result of around 4.7% and organic carbon of around 2.7% would theoretically have more than 5,000 kg/ha of N available in the top 15cm to be used at 100% efficiency, compared with a typical application of 200 kg/ha of inorganic N applied and used at around 60% efficiency!). It is therefore disappointing that our yields were not closer to our neighbour's, but that is part of the excitement and mystery of dealing with such a complex, fascinating medium as soil: The N is there in the system, but the soil is not necessarily giving it to the crops in a way that helps the farmer's short-term bottom line!

To finish off this piece, I must return to stress and HSE.

A few weeks ago, we were notified that a tenancy that we have on a neighbouring estate will end in September next year. (We have had this ground for the last 20 years and it is 25% of our cropping area.) This is another big blow and will have a large negative financial impact on our business. It has precipitated the need for a redundancy on the farm and we are presently going through this process. This has created another stress point for all involved in the business as we have had years of loyal service from all of our employees and no one wishes to see the workforce shrink.

I am sorry that this report is a bit gloomy but I think it highlights a couple of problems in our industry at present:

STRESS: Is widespread in agriculture and is potentially a killer in numerous ways. It's very important to talk to someone and not internalise problems. (I tend to close in on myself and end up spiralling down a metaphorical negative plughole if I am not careful.)

HEALTH AND SAFETY: HSE are anticipating that this may be the worst year yet for fatal accidents in agriculture. The ongoing poor financial situation which is leading many farmers to shed labour and carry higher stress levels is also predisposing to a higher accident rate. **Therefore, it's very important to prioritise Health and Safety**. Even if there are no accidents in a business, any near-misses or incidents involving HSE inspectors can get expensive as the department is self-funding and charges for all visits, emails, etc even if the business is not being fined for breaches.

I promise my next report will be more upbeat!

DRILL MANUFACTURERS IN FOCUS...

PRECISION AND PERFORMANCE: Amazone's new updates to Condor, Primera and Cirrus Grand redefine drilling

As farming systems evolve, the demand for precision, efficiency, and sustainability in crop establishment has never been greater. Drilling technology is at the heart of this transformation, and Amazone has long been recognised for pushing the boundaries of innovation. With the introduction of the Condor 8002-2C, 9002-2C and the Primera 6002-2C, Amazone is setting new benchmarks for large-scale seeding operations, combining high output with unrivalled accuracy.

Condor 8002-2C & 9002-2C – High Output Meets Flexibility

The Condor series has always been synonymous with large-scale efficiency, and the latest Condor 02 builds on that reputation with a host of refinements. Designed for farms where timeliness is critical, this 8 or 9-metre drill offers exceptional work rates while maintaining the precision required for modern crop establishment. In particular the new Condor offers a similar chassis from the Precea range, massively improving compactness and manoeuvrability and keeping a large triple-chamber hooper with a capacity of 4,100 litres split 50, 30, 20.

At the heart of the Condor is the **ConTeC pro tine coulter system**, which has proven its worth in minimal soil disturbance and excellent residue handling. This makes it particularly suited to conservation tillage and direct seeding systems. The latest iteration introduces **automatic coulter pressure control**, ensuring consistent sowing depth even on undulating ground – a key factor in achieving uniform crop emergence.

Row spacing flexibility is another highlight. The Condor can operate at 25 cm as standard, but an optional 20 cm configuration is available for growers seeking quicker canopy closure to suppress weeds and improve soil cover. This adaptability makes the Condor a versatile choice for a range of cropping systems.

Amazone has also integrated **EasyTram**, a clever solution for tramline management. By utilising the

new MultiSwitch distribution head with individual row shut-off, EasyTram simplifies the process of creating tramlines, reducing downtime and improving operational efficiency. Combined with ISOBUS compatibility, the Condor offers seamless integration with modern precision farming

systems.

Primera 6002-2C – Precision at Speed

If the Condor is about scale and flexibility, the **Primera 6002-2C** is about precision and versatility. This 6-metre universal drill is designed to handle a wide range of sowing conditions, from direct drilling into stubble to conventional seedbeds. Its robust design and advanced technology make it a go-to solution for farms looking to maximise efficiency without compromising on accuracy.

One of the standout features of the new Primera, like the Condor, is **MultiSwitch individual row control**. This innovation allows each coulter to be switched on or off independently, reducing overlaps from around 5% to less than 1%. The result is significant savings in seed and fertiliser, as well as improved crop uniformity – a clear win for both economics and sustainability.

The Primera also boasts a **pressurised twin-chamber hopper** with a 5,000-litre capacity, enabling high application rates at speeds of up to 18 km/h. This combination of speed and precision ensures that large areas can be drilled quickly without sacrificing accuracy.

Versatility is another key strength. The Primera can handle a wide range of crops, from cereals to oilseed rape and beans, thanks to its flexible row spacing and coulter options. Like the Condor, it is fully ISOBUS-compatible, with individual row section control and **EasyTram** for simplified tramline control, make it an ideal partner for farms embracing precision agriculture.

Cut n' Sow with TopCut

With the innovative Cut 'n' Sow process, AMAZONE presents pioneering machine combinations of ultra-shallow soil tillage and direct drilling for the most demanding of conditions - an ideal solution, especially for tall and tough organic material. Alongside the new drills, the shallow chopping roller TopCut is now also available in a front and rear mounted variant in sizes of 5 and 6 meters.

The introduction of the Condor 02 and Primera 02 reflects Amazone's commitment to addressing the twin challenges of productivity and sustainability. By combining high output with advanced precision features, these drills help farmers reduce input costs while improving crop performance. The economic benefits are clear: technologies like individual row shut off and automatic coulter pressure control minimise waste and optimise seed placement. At the same time, their narrow coulters provide environmental gains from reduced surface soil disturbance, better soil structure, and

With two no-till machines that combine scale, precision, and versatility in equal measure, whether the priority is covering large areas quickly or achieving pinpoint accuracy in challenging conditions, these drills provide the tools to meet those goals.

Also added to the collection is the Cirrus Grand cultivation disc drill in a new 8 metre working width with up to 3 hoppers for drilling 3 different products simultaneously. Additionally available is the new option for a secondary distribution head for application of products such as Avadex or slug pellets alongside the main furrow by means of baffle plates or coulter tube.

In an era where every seed counts, Amazone's latest innovations ensure that farmers can sow with confidence – and reap the rewards.

EasyTram

Cut 'n' Sow

NITROGEN IN PLANTS & SOIL: A REGEN VIEW

Written by Mike Harrington from Aiva Fertilisers

I have written articles for the DD magazine on Phosphorus and Potassium so it's time to complete the set and take a look at Nitrogen. Nitrogen inputs are generally framed as merely a commodity input in agriculture - something to be bought, applied, and managed. However, Nitrogen is far more than that. It is a 'living element of the ecosystem', tightly woven into the biology of our soils, plants, and climate. Understanding its role within natural cycles is fundamental to transitioning away from extractive models of farming and towards systems that regenerate soil health, build resilience & biodiversity, and improve long-term productivity.

Whilst over 90 % of the nutritional content of a plant is the holy trinity of Carbon, Hydrogen and Oxygen. Nitrogen is the next biggest number and is the nutrient we spend the most time and money on. Healthy plants typically contain 3–4% Nitrogen in their above-ground tissues - far more than most other essential nutrients and this is because nitrogen is central to some of the most vital biological processes in a plant:

- It's a key component of chlorophyll, enabling photosynthesis - converting sunlight, water, and carbon dioxide into sugars.
- It forms amino acids, which make up proteins. These proteins are the machinery and structure of plant cells.
- It's critical in energy transfer and genetic material (DNA and RNA).

In short, without nitrogen, plants cannot grow, reproduce, or survive. However, more is not always better and there is a weak link between Nitrogen applied and yield.

In the soil, nitrogen exists in three main forms, Organic nitrogen (found in decomposing residues, soil organic matter, and microbes), Ammonium (NH_4^+) & Nitrate (NO_3^-). Most of the nitrogen in our soils, up to 95 to 99%, is in organic forms, locked up in humus and microbial biomass. This nitrogen isn't immediately available to plants but becomes plant-accessible through microbial activity, especially under warm, moist, aerobic conditions. In conventional systems, synthetic fertilisers bypass this cycle, supplying nitrate or ammonium directly. In regenerative systems, our goal is to stimulate and feed the soil food web so it can mineralise nitrogen naturally and cycle it efficiently, supporting this process with limited, yet highly efficient, inputs.

There are two primary natural sources of nitrogen, Atmospheric Nitrogen (N_2) that, while inert in its gaseous form, becomes bioavailable through fixation either by lightning or biological nitrogen-fixing organisms. In UK climates, lightning contributes little, typically under 10 kg N/ha/year. However, in a well-structured soil you should have 25% air and that air is 78% N, so you can have nearly 20% N in the soil but not in the right form... So, it's back to the microbes again. Biological Nitrogen Fixation is far more significant in regen systems. Rhizobia bacteria, in symbiosis with legumes like clover, vetch, and lucerne, can fix over 150 kg N/ha/year under ideal conditions. There are a range of other Nitrogen fixing bacteria including Azotobacter, Azospirillum and Pseudomonas (in Bioplus T, one of Aiva's own N fixing solutions), and there is now a plethora of other biological nitrogen options in the marketplace, which although once much misunderstood, are now rapidly gaining evidential study support.

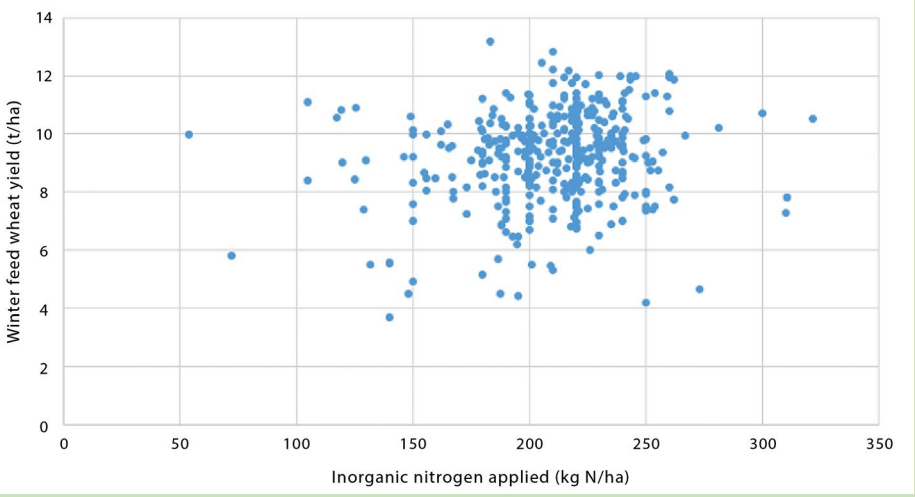


Figure 1. The weak relationship between wheat yield and total inorganic nitrogen applied. Based on 405 Farmbench results (2018–21) for conventional first winter feed wheat on clay loam soils
https://ahdb.org.uk/news/does-it-pay-to-cut-nitrogen-fertiliser *- Source*

In regenerative farming, we view the nitrogen cycle as a living, biological process, not a chemical one. Microbes play the starring role in Immobilisation (soil microbes absorb ammonium and nitrate to build their own bodies, Mineralisation (when microbes die or digest high-nitrogen residues (like manures or legumes), they release ammonium back into the soil) & Nitrification (in well-aerated soils, ammonium is converted to nitrate by bacteria (Nitrosomonas and Nitrobacter). Nitrate is highly mobile in the soil and vulnerable to leaching). In the UK, with our frequent rain and heavy soils, nitrate leaching and denitrification are major pathways of nitrogen loss, especially in winter and on compacted or waterlogged soils, and our rules for applying Nitrogen

BASE UK

BIODIVERSITY • AGRICULTURE • SOIL • ENVIRONMENT

We are the premier organisation, dedicated to promoting independent, farmer led, regenerative agricultural knowledge across the UK.

Our mission is to enhance soil health, increase biodiversity, and support businesses by embracing sustainable farming practices that benefit both farmers and the environment.

Over the summer, several BASE-UK members generously hosted their peers on farm visits, and once again their hospitality and knowledge-sharing were greatly appreciated. One new member, **Martin Caunce**, who attended **Jonathan Hodgson's farm walk**, told me at Groundswell that he had already got full value for his membership from that single event. He learned so much and was delighted to make many like-minded contacts.

Other hosts included **Tom Pearson** and **Rhys Jones**, who welcomed members to their Regional Meeting in June – an event reviewed by journalist and member **Louise Impey** in Farmers Weekly. Louise also wrote about the visit to **Penn Croft Farms**, where **Simon Porter** and his team opened up their farm, winery, and vineyards for an insightful tour.

In Scotland, **Jock McFarlane** and **Ben Barron** hosted members for a fantastic day on their respective farms. Our chairman, **Edwin Taylor**, welcomed members to another Regional Meeting in May, while **Niall Anderson** and the team at **Agrovista** kindly arranged an exclusive day at the **Lamport Project**. Members also had the opportunity to visit the Conservation **Agriculture Research Field site** and **Harper Adams Farm** with **Dr. Joe Collins**.

A huge thank you to everyone who contributed to making our summer programme so varied, with opportunities spread across the country. **Visit our website to read some of the reviews of these visits**.

ANNUAL CONFERENCE - 11th & 12th February 2026.

The theme is "Growing Without Government Support!" and will take place at The Delta Hotel, Huntingdon. Full details will be sent to members shortly and will be available on our website **www.base-uk.co.uk**. **SAVE THE DATE!**

Upcoming Events

Don't miss our autumn and winter programme of farm walks and webinars. Updates will be shared by email and online. Here is a flavour of what's already confirmed – and there's more in the pipeline!

- 30th October – Webinar - Lucie Buchi - Results of Survey on Parasitic Weeds.
- 6th November - Webinar - Journey into Regenerative Agriculture with Colin Chappell.
- 14th November - Members Workshop at Rothamsted Research, Herts.
- 26th November – Member Farm Walk Hosted by Stuart Tabernor, Northants.
- 14th and 15th January 2026 – LAMMA.

CEREALS -

We hosted a fantastic conference in June, and look forward to Cereals 2026 on 10th and 11th June at Diddly Squat Farm. Once again, we will be partnering with stand sponsors Tees Law. Members can register for tickets by inputting their membership number (contact Rebecca for help finding yours) to prove their eligibility to attend.

Quarterly Newsletter! - This is available to anyone interested in learning more about what we do. To subscribe, email **rebecca@base-uk.co.uk** or visit our website and follow the link.

BECOME A MEMBER

BASE-UK is a welcoming and dynamic network where you can continuously learn from both peers and industry specialists whilst enjoying the camaraderie of a supportive community.

As a BASE-UK member, you will enjoy a range of benefits, including:

- Access to exclusive meetings, webinars, events, and farm walks.
- Networking opportunities with like-minded people.
- Our Annual Conference – our premier event to learn and network.
- Educational resources.
- Research – connections with Rothamsted Research, James Hutton Institute, Harper Adams University and several other research groups and universities latest research and updates on conservation and regenerative agriculture.
- Ongoing sponsorship for research undertaken by Joe Collins, PhD student at Harper Adams University.
- Forum – a private forum for discussions available only to members.
- Earn BASIS and NRoSO points annually just by being a member as well as from some of the events **organised by us.**

For more information about how to join visit our website www.base-uk.co.uk or scan the QR code

reflect this.

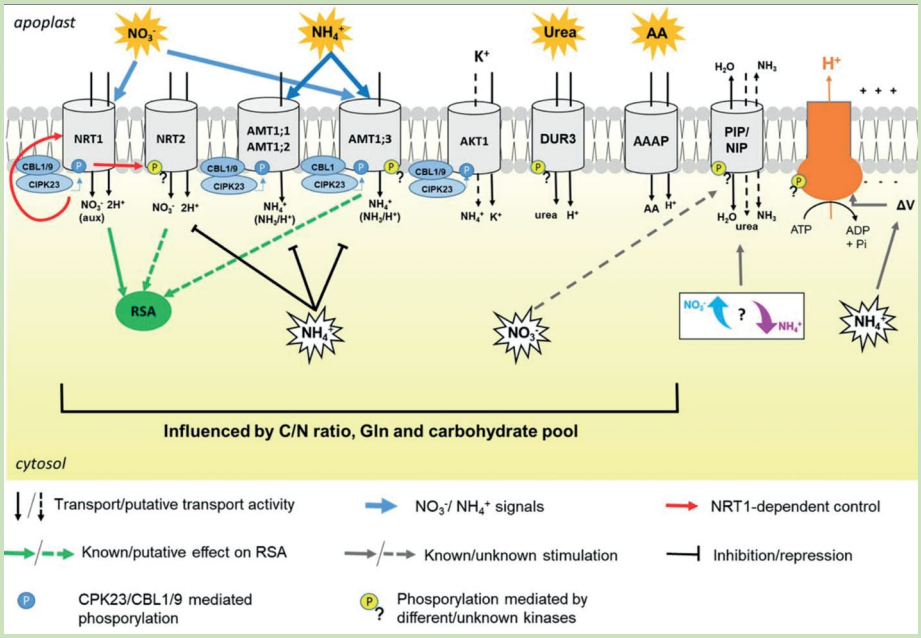
Understanding how nitrogen is lost from the system is crucial for regenerative fertility management. This could be via Leaching (nitrate is water-soluble and easily washed beyond the root zone. This not only wastes nutrients but contributes to water pollution (e.g., nitrate-sensitive zones in England)), Denitrification: (in saturated soils, microbes convert nitrate into gases like N_2 and N_2O (a potent greenhouse gas)), Volatilisation (ammonia gas can be lost from surface-applied manures and urea, especially on high pH soils or during warm, windy weather) or crop removal (harvested crops take nitrogen off-farm).

Plants absorb nitrogen primarily as nitrate (NO_3^-) and ammonium (NH_4^+). However, it is now understood that plant can take up Nitrogen in various ways including amino acids, peptides (chain of aminos), proteins (chains of peptides) and, amazingly, biology directly in the form of rhizophagy, where the plant takes in whole microbes, squeezes the N out and spits them out again to repeat the cycle!

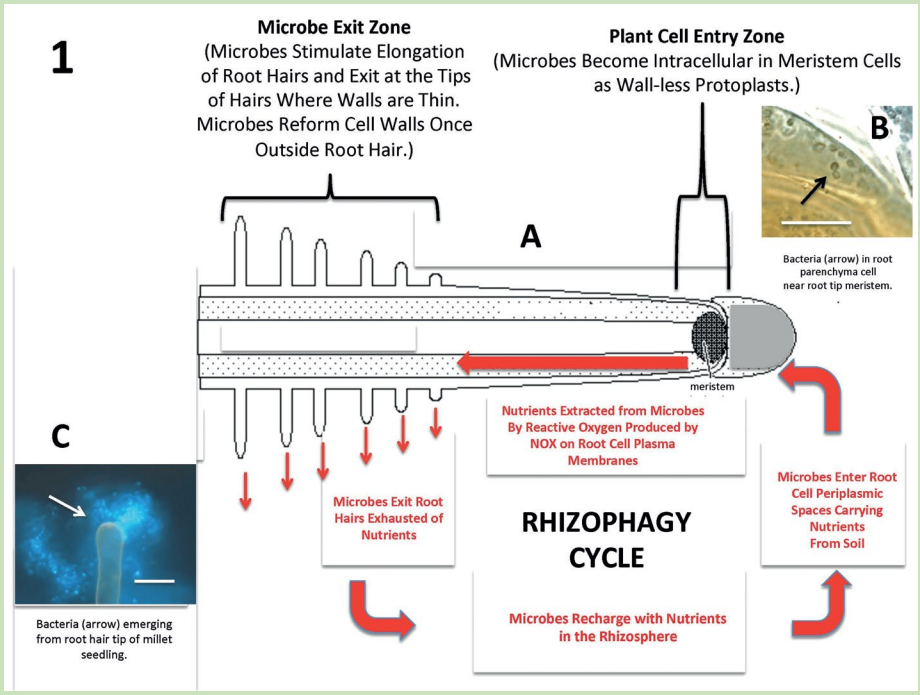
The rhizophagy cycle is fascinating when you get your head around it, and the John Kempf's of this world are saying that this alone could supply 100% of your crops need for Nitrogen if managed correctly, I'm not that brave yet, but it shows what an important part the microbes play. As we understand more about how they work I think they will become a much larger part of the system. The way the world is going with NVZs, Carbon footprints and Nitrogen taxes, it's only going to drive more R&D in this area.

In regen systems, our aim is to enhance root mass and root health which leads to biological associations and access to nitrogen, rather than simply dosing with synthetic fertiliser, which can switch these magnificent microbes off, the last thing that we want! As ever, it's all about balance.

In regenerative agriculture, nitrogen isn't something just to be bought, it's something to be built and there are some simple, yet effective key principles to bear in mind when trying



The diagram above shows nitrogen uptake pathways into the plant, it's a bit busy and I'm not going to try and explain it in detail, but the yellow flashes at the top show that the plants are capable of taking up the various forms of N, so to put all of your N on in one form makes for a very lopsided diagram. We want diversity in Nitrogen as well, so making sure that you are various forms (AN, Urea, UAN, foliar, biological) at the right times can make a huge difference to crop responses and NUE.



to do so....

- 1. Build Organic Matter: Organic matter is the nitrogen (and Carbon) bank of the soil.
- 2. Feed the Soil Biology: Use compost, cover crops, and reduced tillage to support microbial life. Stimulate with fermented molasses and Humic / Fulvic substances
- 3. Legume Integration: Diverse legume species in pasture and cover crops fix free nitrogen from the air.
- 4. Avoid Over application: Excess N disrupts soil biology, drives carbon loss, and increases pest pressure.
- 5. Use Compost and Manure Wisely: These should be fully composted and applied at the right time to minimise losses.
- 6. Utilise Foliar Nitrogen: Once the canopy is built, it's a much more efficient way to apply, bypassing the soil-based issues.

Soil and tissue tests should look

beyond just NPK and should include but not be limited to Organic matter levels, Active Carbon, Soil respiration (CO_2 burst), Microbial biomass, Tissue analysis, Sap Analysis, SNS and N Sensor. All of these will give you a reading for N in one form or another, there might be bit of conversion/and or blind faith required! But they are all giving you information. If we can't measure it, we can't manage it, and reducing your N too much could cause a cascade of issues. Staying on top of the data is critical as these all start to build a picture of the limiting factors in your system.

As part of the industrial move towards climate change mitigation, we are now expected to minimise the negative by-products of synthetic N and the introduction of chemical stabilisers has been a recent step towards this. It' worth understanding how these work but that's for another article. However, a few examples of these would be Advance Shield (an NBPT reducing volatilisation from urea), N-Serve® (nitrapyrin inhibiting nitrification to reduce losses) and ESN®, Instinct® (slow-release coatings and inhibitors). These products are often promoted as insurance policies against losses and legal prosecution - but they're still treating the symptoms, not the cause. Our focus should be on the living soil structure, cover crops, and water management to reduce losses naturally.

We like to apply partner products too when we are applying high rates of Nitrogen, but normally Carbon-based inputs like molasses, fermented molasses, humic and fulvic acids. These all have the potential to improve uptake efficiency of the applied synthetic fertiliser. I have sold these types of products for 20 plus years and there is big difference using some straight molasses compared to a true humic acid. Some of it is down to the complexity of the materials. Molasses is full of simple sugars which the bacteria will love and consume very quickly but this will be very boom and bust and will also feed up some the soil borne pathogens. More complex materials like fermented molasses, (where many of the sugars have been converted to alcohol and removed) will feed a wider range of the soil food web and will give you a better partnership. Even more complex materials like humic acids are more likely to be feeding the fungi in the soil and that is the key. Most conventionally farmed soils will be bacterially dominated and, again, it's balance we need, so any help we can give to the fungi will be positive one. We have run independent trials on Nurture N as a partner to UAN and they have shown you could cut back your N by up to 20% and maintain/improve yield from increased NUE. Well worth looking into if you are not already using one.

Finally, regenerating nitrogen cycles is about restoring balance - not forcing yields through chemical intervention. In the UK, with our temperate climate, diverse soils, and mixed farming heritage, we have the ideal conditions to farm regeneratively. Rather than seeing nitrogen as a product, let's start seeing it as a function of healthy, living soil.

First lambs at Romshed Farm

PASTURE FARMING BOOSTS SOIL HEALTH AND BIODIVERSITY

A low input, grass-based approach to sheep and dairy farming is producing delicious food and benefitting the soil and wildlife on two Pasture for Life farms. Former Pasture for Life director Sara Gregson paid them a visit

Sheep farming in Kent

Fidelity Weston has run her families 82 hectare mixed farm, near Sevenoaks since the early 1980s. As new entrants then to farming, they took on a derelict holding, which had no fences or gates.

The advice she was given was to buy 450 Mule and Masham ewes, lamb them and sell them as store lambs for other farmers to finish.

Fidelity Weston

In 1998 she gave another local farmer 12 hectares of the land for set aside and stopped applying fertiliser or spraying against weeds in these fields.

"We were amazed when leaving these set aside fields alone much of the original wildlife bounced back," says Fidelity. "After that we converted to organic in the year 2000."

To start, four traditional Hereford cattle were bought in, along with a couple of sows and pastured chickens producing eggs and meat. Over the years the herd has grown to 30 cows and the sheep breed changed to Lleyn.

Fidelity then became involved with Pasture for Life, which champions the rearing and finishing of cattle and sheep solely on pasture.

Flock changes

Fidelity found it relatively easy to produce beef cattle just on grazed grass in the summer and supplemented with high quality, species-rich hay in winter. Changing the sheep enterprise did not prove so easy.

The cows and calves graze together

"First, we had to had to change the lambing date," she says. "We used to lamb 180 ewes indoors in two batches in February and mid-March, outside, if possible, but weather dependent. Now we lamb at the start of April so we can sure that the grass is growing well for the ewes to produce milk.

"Next, and the hardest thing to do, was to stop feeding ewes that had scanned with twins or triplets in the six weeks before lambing. The Pasture for Life Standards allowed us to transition to zero concentrates over three years – but lambing percentage did drop

from 1.8 down to 1.4.

"However, our hardy outdoor ewes are very good mothers and our post birth lamb losses are extremely low, well below 5%, compared to the industry average of 20%."

"It works out that the total number of live lambs for both systems is almost equal. But in our system now, this is for no cost of feed or labour to feed them and less cost of dead lamb disposal."

Grazing

The ewes and lambs move between the fields based on grass growth and animal needs. Most of the fields are between two and four hectares and sometimes these are split into two by an electric fence. The fields are rested for as long as possible before being grazed again and where possible, rotated with the cattle.

The lambs are finished off grass and any not reaching their target liveweight by the end of the autumn are taken through the winter on neighbouring farmers' fields and sold the following year as hogget at 20 to 25kg deadweight.

Fifty lambs are sold from the farm each year and the remainder are sold for good prices as lamb or hogget through Kent based Abraham's Meats.

"The move to 100% pasture fed lamb has had its ups and downs," Fidelity admits.

"But the system is working now and we will not go back to feeding the sheep. I think it comes down to getting the right breed of ewe to cope with the conditions and making the most of lower lambing percentages.

"I feel we are there now and reaping the rewards, producing high quality meat at a very low cost, whilst also boosting soil health, biodiversity and wildlife across the farm."

Dairying in Norfolk

Stuart Mayhew and his family have farmed in Woodton, 12 miles south east of Norwich since the mid 1940's, mainly arable and pig farming on 204 hectares (504 acres) across two farms. However, increasing health problems with the pigs led to a complete re-think of enterprises in an attempt to escape the never-ending boom and bust pig cycle.

"We were on a family holiday in Scotland in 2016 when I fell in love with the idea of having Jersey cows, producing the highest possible quality of milk and selling this direct to consumers," recalls Stuart's wife Rebecca. "We came back home already having bought one in-calf cow and three heifers."

Rebecca Mayhew

The Mayhews were complete dairy novices and started out with a portable mini milker and learning how to milk from YouTube. Moving the dairy to the current site at Old Hall Farm in 2020, they refurbished some of the farm buildings. The herd now has 55 cows, predominantly Jerseys.

"Our core objective has always been to produce high quality, nutrient-dense food at a sustainable price.

"The second important element is that the animals have an almost 100% grass and pasture diet, because this is what ruminants are designed to eat and is what produces the most nutrient-rich milk. We do not believe in importing protein from around the world or feeding human grade ingredients to ruminants.

"Finally, and most importantly is that the calves are kept at foot with their mothers, for the first six to nine months of their lives. This is non-negotiable for me. The herd lives together, whatever stage of lactation, even the dry cows."

Grazing pasture

Old Hall Farm is on heavy clay ground and continuous arable crops were grown for many years which degraded the soil. When the cows arrived, there was no water and no stockproof fencing. In 2019 the fields were sown to herbal leys with seven grass species, several legumes including clovers, lucerne and sainfoin and other herbs under a Countryside Stewardship Scheme. The fields are now in the second year of a second five year scheme.

Each field is divided into small day paddocks with electric fencing and grazed, then rested for as long as weather conditions allow from 30 when it rains, to more than 70 in drought. No artificial fertiliser is applied.

"We use adaptive multi-paddock (AMP or mob) grazing as this gives us flexibility to 'adapt' to the current soil, grass and weather conditions," Rebecca explains.

"We take a holistic approach to managing our land and our animals and it seems to be working; our soil is improving – organic matter has gone up from 2% to 6% in just six years. And there is a noticeable increase in biodiversity including birds, invertebrates, dung beetles and other insects.

"We have been members of Pasture for Life for many years and I work as a regional facilitator for them. We are working towards Pasture for Life certification for all our beef and lamb and the dairy will follow in due course."

Rebecca estimates the calves drink around seven to ten litres of milk each day, leaving another ten litres to be taken into the dairy to be bottled or made into a wide variety of added value raw milk products, including milk shakes and ice-cream. People can buy online or come to the shop to purchase.

"The long term plan is to farm without taking any subsidy, so we are not beholden to people who do not understand what we are trying to do. Our cows are at the very heart of our business, and in return for producing delicious, high quality milk, they have long, healthy, well-lived lives."

"GROWING MOVEMENT" OF FARMERS SEEK BENEFITS OF TREES

Over a thousand attend Agroforestry Show after record breaking drought

A "growing movement" is recognising that trees can offer farm resilience and business opportunities in the face of extreme weather with more than a thousand people joining the Agroforestry Show.

The Soil Association and Woodland Trust event brought farmers, foresters and environmentalists together at Woodoaks Farm in Hertfordshire to share knowledge and inspiration on the economic benefits of agroforestry – farming in harmony with trees.

After record breaking temperatures and drought this year, many discussions at the show highlighted how trees are "urgently" needed to provide shelter for livestock and crops while also providing fodder when grass availability is limited.

Farmers also shared insights on how trees boost milk yields and fix nitrogen, plus ideas around new crops that are becoming more viable as temperatures rise, such as like almonds, walnuts, persimmons, and even olives.

Talks and farm walks provided advice on everything from alley cropping with trees within fields to better maintenance of hedgerows and farm woodland, including timber opportunities.

Soil Association Head of Agroforestry Ben Raskin said: "The second Agroforestry Show has been another roaring success and the discussions of the benefits of trees have never felt more relevant after such a challengingly dry year. A growing movement of farmers and foresters are realising how much our farmed landscape needs to incorporate more trees to protect our food security. There are challenges ahead but it's not all doom and gloom – there are huge opportunities with tree crops that weren't viable here before. Every farmer has trees they could be making better use of, or areas where they could plant new ones. But the situation is urgent and the time to get moving on agroforestry is now."

Helen Chessire, Lead Policy Advocate for the Woodland Trust, said: "We've had another fantastic Agroforestry Show and what's been brilliant this year is that we've seen discussions evolve from last time. There has been a new depth to discussions. We have moved past exploring what agroforestry is and why it's important – now we are onto how to get it done at scale. The advice hub, training hub and demonstration area have been popular which really shows the appetite that farmers have to lead the charge on getting more trees into our farmed landscape, which we desperately need to protect both UK food production and nature."

Farmers urged not to delay on agroforestry

A key theme of the show was also the uncertainty around government support with the Sustainable Farming Incentives on pause, and both charities are offering advice beyond the show for what funding streams are still available.

Leading a talk on climate adaptation, Martin Crawford, founder of the forest garden at the Dartington Estate and the Agroforestry Research Trust, urged farmers not to wait for government funding.

He said: "We need to do the right thing now whether or not the grant system pays us for it. We have to take action if we want our farms and businesses to survive. There are risks whatever we do or don't do, but I do actually think the risks of not doing something are much greater now. Doing nothing is not really an option anymore. I don't think we can use the past climate as a guide to the future of growing after a year like this where everything has gone haywire. There's an urgency to this because trees and perennial crops take some time to establish so I would just say don't delay, get something started."

Farmers across the event shared knowledge on how to get started and what pitfalls to avoid, with lessons also shared by the host farm which is managed by the Soil Association and farmed by tenant farmers.

As part of conversion of most of the land to organic, the farm has introduced alley cropping to a 70-acre field and used hedgerows to divide fields to support longer rotation periods.

Information around the advice given at sessions, including advice on private and public funding streams available, is available on the Agroforestry Show website where more detail will be added in the coming weeks.

Find out more at
www.agroforestryshow.com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FARMER FOCUS JOHN CHERRY

I mentioned a couple of months ago that we're dividing the farm into two so that my brother Paul and I can do our own things. It's been an interesting year with some tricky weather, but pleasingly, we spent very little on any of the crops, so yields of 5 to 6 t/ha of wheat paid off. This is particularly true of the Wildfarmed crops. They had a pre-drilling glyphosate, no other sprays and only 80kg of N (it got so dry, it wasn't worth adding any more), and came in at 14% protein, which should make quite a good premium on top of their generous wheat price.

I've talked to a few farmers who aren't planning on sowing much (if any) wheat this autumn. As a result of the split, I now find myself with most of the cattle, a Massey 135 (1967 pedigree) and not much else and no labour beyond my long-suffering son, Matthew. So, my fixed costs are low, and I can't get very enthusiastic about paying contractors' rates to grow crops which will break even at best, when I could fallow the land and clean it up, restore some fertility and possibly graze the cattle.

We've therefore planted a load of cover crops from seed that was knocking about in the shed, giving us the option to slot in a spring crop if things look more positive then or cash in on the SFI if that ever reappears. Meanwhile, the cattle are getting a few more herbal leys, which will enable us to cut the one expensive facet of our current system, which is housing the animals. I say housing, but most of them spend the month or two when it's too wet safely grazing in a corral.

We've planted a load of cover crops from seed, giving us the option to slot in a spring crop

I'm converting a Victorian walled garden into a corral for them this year. It's got a rubble floor, dating back to when Grandad let the yard to a dodgy builder 45 years ago. It's been a dumping ground ever since, but it'll make a good draught-free home for when the beasts need it. We'll put a layer of tree surgeon's woodchip on the bottom and add straw as required, which makes for top-grade compost once the animals have made their contributions.

We are sowing some wheat as, apart from anything else, we'll want to have a bit of straw baled up for this job. We pulled out one herbal ley last year and had a crop of beans off it this year (not a great success), so I felt that we should go for the wheat option. I'm eyeing up some others which are five or six years into a four-year planned ley. They keep producing, so there's not a great temptation to spray them off.

This is one time when the lure of the plough (which doesn't spend much time in my breast) looms. When getting rid of a medium-term ley, it's hard to destroy satisfactorily with glyphosate, although you do get to keep a nice living mulch of clovers. I've been advised many times that the plough is your friend here, but I can't quite bring myself to dig the old thing out of the Groundswell carpark. There is some debate as to whether extreme soil disturbance hits the leatherjackets and wireworms enough to make a difference to the following wheat crop, which would be useful in terms of skipping the requirement for plonking beans in this point of the rotation. I suppose there's only one way to find out...

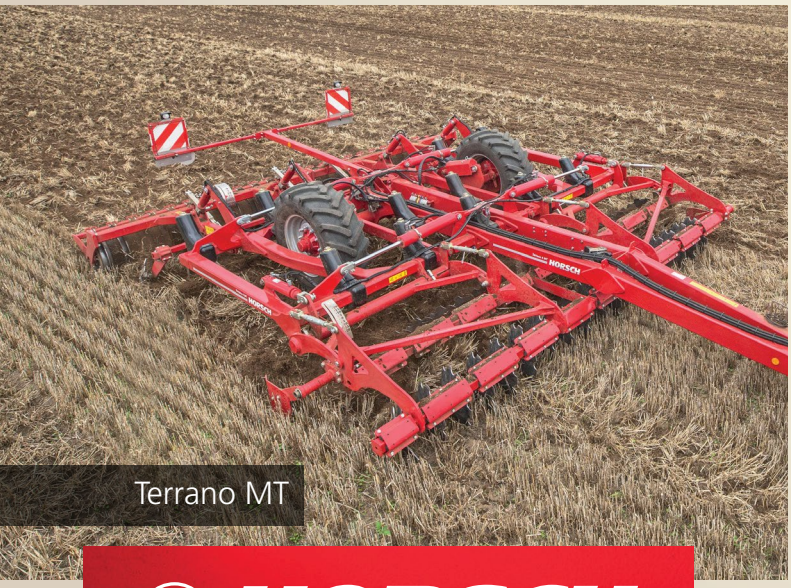
This is one time when the lure of the plough looms

Our min-till potatoes are ready for harvest. We've had problems getting anyone with a potato harvester interested in trying to lift them in a no-till situation, as all the tubers are lying on the surface of the soil under a blanket of straw and the mainstream equipment all needs some soil to make the lifting work. So, this year we min-tilled the ground first, planted the spuds in the three inches of disturbed soil and then laid the straw on top. They've grown very well considering what a dry year it was, so, fingers crossed, we're hoping they'll be machine harvestable. Meanwhile, if there's anyone out there who fancies designing a simple lifter that would pick spuds off the ground, flick the straw away and fit on a Massey 135, then please get in touch. I think the no-till method is best suited to old-fashioned acre plots fit for supplying your local community.

In other news, we're preparing for next year's Groundswell event. A request for applications for sessions has just gone out, so if anyone reading feels that they have something useful to present, now is the time to fill in the form on our website and see if it hits the mark with our judging committee. Be warned though, competition is strong and unfortunately we have to be ruthless — if we had three times the number of tents, we'd still need to cull a lot of the applications. Sad for those declined, but terrific news for the movement itself that there is so much enthusiasm out there.

Our Groundschool project is delayed by bats in the barn but come next April we hope to get building, and the pause has given us a chance to finesse exactly what we'll do and how we'll do it. Which is another way of saying, like so much of the regenerative story, we're still making it up as we go along.

Joker RT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TOGETHER FOR A HEALTHY AGRICULTURE

THE **GROUNDSWELL** SESSIONS

No one can attend or probably even watch the replays of all the Groundswell Sessions. But that's what Mike Abram's new Substack newsletter "The Regenerative Farmer" is promising to help with, but first Mike explains why he started the Newsletter

Change is coming.

"It's made farming exciting again."

Over and over that's the phrase I'm hearing about those farmers who have made the jump into farming regeneratively. And if it is not exciting, then it is making farming "interesting" again.

For the past generation, farming had become relatively easy, particularly in the arable sector. Excellent research and development from chemical and plant breeders had led farmers to be able to grow crops in the UK where a seed or a can would solve most, if not all of the problems one would face.

But nature fought back...while suffering at the same time. Resistance to chemicals increased decreased their efficacy, while the perceived damage to the environment has led to drastic changes in how easy it is to register pesticides.

The result is many farmers are now beginning to believe a change in approach is needed.

Enter regenerative agriculture.

Five years' ago, I wrote the above intro to my new Substack newsletter called *The Regenerative Farmer*. Reading it now, nothing much has changed per se. I don't have to tell readers of *Direct Driller*, about how many farmers are still excited about trying to farm in a different way, although, I'm sure some of you will think the term regenerative farming has become vaguely meaningless and overused.

Techniques like cover cropping, reduced cultivations and direct drilling are much more commonplace. Some are integrating livestock into arable rotations very successfully, while the first regenerative premiums have come on stream from the likes of Wildfarmed and Green Farm Collective. The Groundswell Festival has become a beacon for regenerative farming and goes from strength to strength.

But that success has brought challenges too. Regenerative farming has definitely reached the attention of corporates. In some ways that is good - without corporate buy-in, regenerative farming will never scale to a place where it really changes the way we produce food, but equally the risk is regenerative farming becomes just another marketing slogan co-opted by big companies for their own benefit, sometimes at the expense of the farmer's best interests.

And make no mistake for regenerative farming to really change the world, commercial success is necessary, and in the UK that's being hampered by a government seemingly hell-bent on making farmers' lives as difficult as possible with its changes in policy on inheritance tax, changes to National Insurance Contributions, and slow decision-making on future iterations of the Sustainable Farming Incentive.

My world has changed a little in the past five years too.

In 2020 I was at the beginning of my freelance career, slightly concerned in the middle of COVID whether I was doing the right thing and whether I would have enough work. The Substack newsletter was a little side project designed to keep me busy when times were slow. But the slow times never came, which is why I published a grand total of about six articles - all slight variations of articles I had sold into a farming magazine in the UK, before my workload and a general acceptance that my time was better served writing for magazines was going to be much better for the bank balance, brought the Substack to a halt.

But it has always been at the back of my mind, and I remain intrigued whether I can build an audience for my content on Substack. Substack is a site that offers writers the chance to showcase their work. New articles are emailed to subscribers when published, while you can also read on Substack's app or website. It can be free or be paid for, just like you would buy a magazine.

Ideally, I would be using The Regenerative Farmer to produce original content, but it's a bit chicken and egg. It's difficult for me to justify the time to produce original content without paying subscribers, but without original content I'm not likely to get many people to subscribe!

And while I'm continuing to attract enough work through my freelance journalism endeavours, I have less incentive or need to build the Substack.

But I am willing to invest a little bit of time again - not with completely original journalism, but with something that I think could be of value - and you, my readers, will soon tell me through your subscriptions (free or otherwise) whether that is the case.

That brings me back to Groundswell and in general to the rise in content on podcasts and YouTube about regenerative farming. There's so much that it is impossible for one person to have enough time to consume it all, and I want to see if I can help.

So, my idea is to use some AI tools to help summaries every Groundswell Session as they come online on YouTube. Quick to read and digest, and if one tweaks your interest, a link will take you back to the source material to watch or listen.

Direct Driller has kindly agreed to publish one or two with a link to my Substack to help me build an audience.

Here's a couple of examples to show you what it looks like.

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THE GROUNDSWELL SESSIONS 2025

INSIDE THE ROOM - CAN BRITISH FARMING BE SAVED?

A debate about government policy, food systems and supermarket power involving three men with an inside track. What does it mean for regenerative farming?

Location: Groundswell Festival, 2&3 July 2025

Seminar: Inside the room: Can British Farming Be Saved?

Published: 2025-08-03

Length: 59:15

Summary

This seminar brought together Henry Dimbleby, George Eustice (former Secretary of State for DEFRA), and Justin King (former CEO of Sainsbury's) to explore the state of British farming and whether it can be "saved" in its current form. The discussion opened with the paradox that the UK food system is both a miracle—providing cheap, abundant food—and a disaster, being a leading driver of ill health, biodiversity loss, and greenhouse gas emissions. Eustice stressed the need for long-term policy consistency and for farmers to gain financial resilience through regenerative practices, while King highlighted the importance of consumer demand and trust, urging retailers and policymakers to better anticipate consumer concerns.

The panel examined deep structural challenges: political churn and short-termism in government, supermarket power and farmgate prices, and the difficulty of shifting consumer behaviour towards healthier and more sustainable choices. Ideas discussed included advertising campaigns for fruit and vegetables, levies on junk food marketing, and new regulatory or incentive mechanisms to reward environmental delivery. Both speakers agreed that change must be long-term, systemic, and collaborative, requiring alignment of government, retailers, farmers, and consumers.

Key takeaways

- Long-term policy stability is essential for farmers to invest in regenerative agriculture and nature-friendly practices.
- Farmers need structural increases in farmgate prices (5–10%) to be profitable without relying on subsidies.
- Retailers must anticipate and lead consumer concerns, not simply follow, while maintaining trust.
- Government intervention should focus more on incentives and consistency than bans and short-term fixes.
- Public health and sustainability goals could be advanced by redirecting food advertising spend towards fruit, veg, and healthier diets.

Want to know more?

Regenerative farming and policy stability

George Eustice argued that the future of farming lies in rediscovering traditional husbandry combined with modern technology. He stressed that policy must remain consistent for at least a decade to allow regenerative approaches to take root, citing projects such as Knepp and Hope Farm that only showed ecological results after many years. Political churn, Treasury short-termism, and changes of government were identified as major obstacles to progress.

"Unless you… stick to things that work and not endlessly chop and change policy… you're never going to get anywhere."

— George Eustice, former DEFRA Secretary of State

Consumer power and retail responsibility

Justin King highlighted that consumer decisions are rarely about abstract sustainability but about pleasure, convenience, and trust. He argued that while retailers must respect consumer choice, they should also lead—anticipating future concerns and ensuring transparency. Supermarkets, he suggested, could do more to promote healthier diets, but must frame choices positively rather than simply banning or taxing products.

"The beating heart… of great supermarket retailing should be informed choice."

— Justin King, former CEO of Sainsbury's

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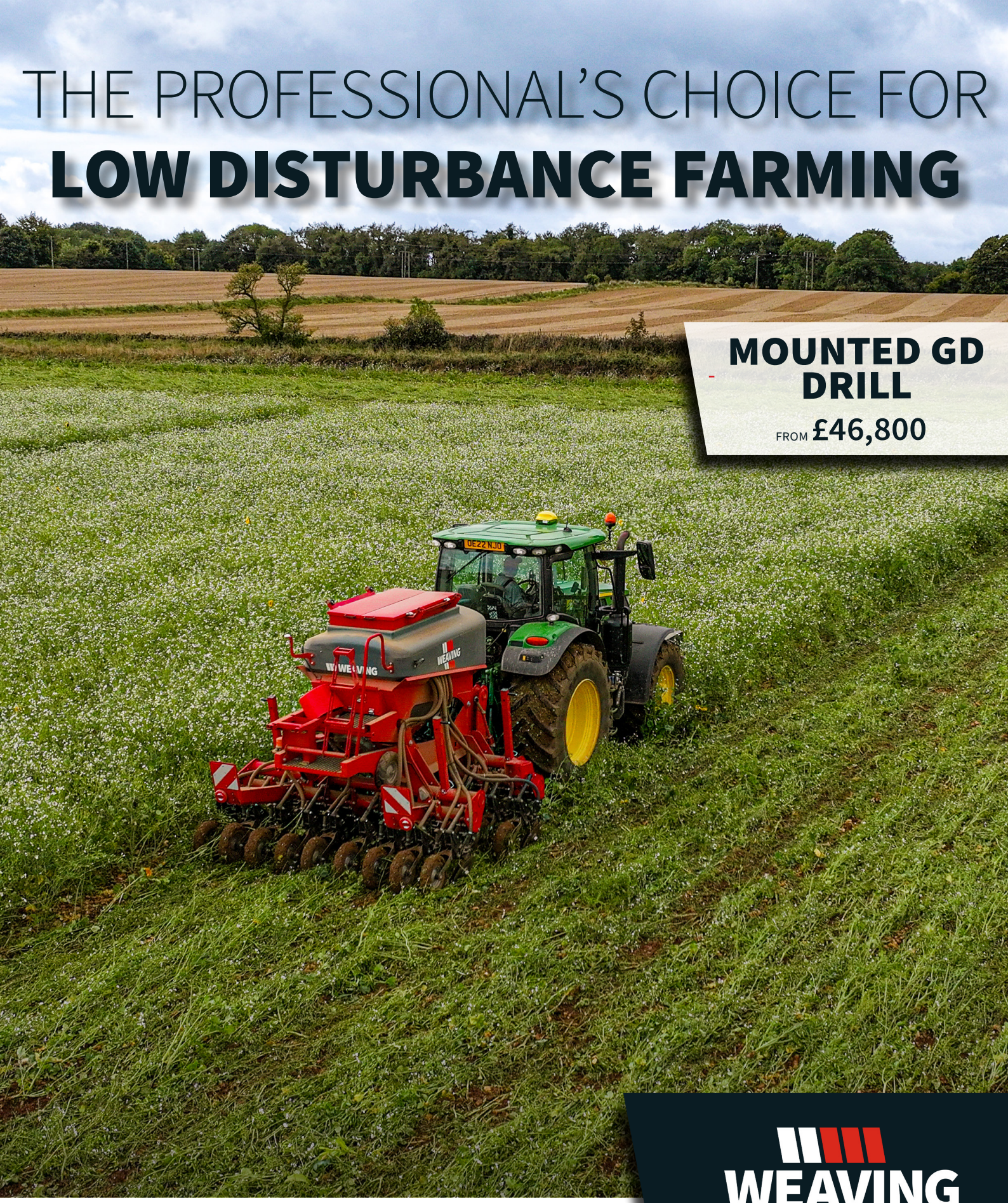

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Supermarkets, farmers, and pricing

The debate over supermarket power revealed contrasting views. Eustice supported regulatory mechanisms to ensure fair contracts and raise farmgate prices structurally, while King warned that interventions risked raising processor margins rather than helping farmers. Instead, he promoted retailer-farmer partnerships, such as Sainsbury's dairy development group, which paid a premium for agreed practices and enabled valuable peer learning among farmers.

Public health and food advertising

The panel agreed that obesity and diet-related disease impose a massive economic and social burden. Both speakers supported redirecting a portion of junk food advertising budgets into high-quality campaigns promoting fruit, vegetables, and healthy eating. They pointed to past successes, such as Sainsbury's nutrition labelling and fish sourcing policies, as evidence that supermarkets can shift consumer behaviour when they take a lead.

Trade, environment, and political trust

Eustice reflected candidly on trade negotiations, criticising concessions made in the Australia deal and highlighting how poor political processes undermined farmers. Both he and King linked public scepticism and the rise of right-wing populism to failures by political and business leaders to get ahead of public concerns. They argued that greater honesty, transparency, and shared long-term vision are essential to rebuilding trust.

Watch the session here:

THE GROUNDSWELL SESSIONS 2025

"SILVOHORTICULTURE — INTEGRATING TREES INTO VEGETABLE PRODUCTION"

A much more technical session, with Soil Association's Ben Raskin and grower Andy Dibben explaining why agroforestry can help with vegetable production

Location: Groundswell Festival, 2&3 July 2025

Seminar: Silvohorticulture — integrating trees into vegetable production

Published: 2025-09-26

Length: 55:57

Summary

In this seminar, Ben Raskin (Soil Association) and Andy Dibben from Abbey Home Farm share over 20 years of experience combining horticulture with agroforestry. They explain how integrating trees into vegetable systems can deliver multiple benefits, from shade and wind protection to improved soil health and water management. Their central message is that trees are not a luxury in horticulture but a vital tool for building climate resilience.

Through practical examples from their farms, they show how trees can stabilise yields, enhance product quality, and extend growing seasons. They also highlight the commercial opportunities of silvohorticulture, where trees provide not only environmental services but also products such as fruit, woodchip, timber, or even specialist crops for floristry and medicine. The discussion stresses that diversity—both of crops and tree species—is key to adapting to uncertain weather and future climates.

Key takeaways

- Shade from trees reduces heat stress, improves vegetable quality, and extends shelf life.
- Shelterbelts cut wind damage, conserve soil, and boost pollinator activity.
- Trees aid water management by acting as natural soakaways in floods and reducing evaporation in drought.
- Agroforestry systems provide organic matter and fertility, lowering reliance on external inputs.
- Tree species choices should balance productivity, biodiversity, and climate resilience, with diversity central to reducing risk.

Digging deeper

Shade as a tool

Andy explained how crops such as lettuces, brassicas, potatoes, and even tomatoes suffer under prolonged heat. Integrating trees creates dappled shade, which improves visual quality and yield, while also extending shelf life. In glasshouses, nectarines and apricots have been used to create natural shading that regulates growth and prevents disorders like tomato ripening issues or pepper sunburn.

"The trees cost £10 each, and nature does the rest of the work." — Andy Dibben, head grower, Abbey Home Farm

Wind protection and microclimate

Ben emphasised that shelterbelts not only prevent physical crop damage but also create warmer, more stable microclimates. This allows earlier planting and extends the season for marginal crops such as courgettes and sweetcorn. Reduced wind also retains soil on farms and encourages pollinator activity. Pollinators are more effective in calmer conditions, boosting both biodiversity and yields.

Water management

Trees play a dual role in handling excess rain and drought. Their roots fracture soil, improving infiltration, while organic matter from leaves and root decay increases water retention. Andy noted that with abstraction licences under increasing scrutiny, reducing evaporation and transpiration losses is vital for future viability.

Soil, fertility, and added outputs

Ben described how coppiced alleys and woodchip can improve nutrient retention and soil biology. By mimicking natural cycles, farmers can reduce reliance on fertilisers and pesticides. Trees also offer saleable products: fruit, nuts, floristry stems, timber, coppice poles, and even materials for biodegradable products. These outputs add diversity and resilience to farm income.

Species choice and future resilience

When asked about tree selection, both speakers highlighted aligning species to farm objectives. Apples, coppice species like hazel and alder, and hedgerow trees for biodiversity were all used. At the same time, trialling less conventional crops such as almonds or figs is seen as necessary experimentation in an unpredictable climate. Diversity in genetics and provenance is essential to guard against disease and climate risks.

"Diversity is absolutely key… you wouldn't just go in and plant one species from one provenance all over the farm because that's inherently risky."

— Ben Raskin, Soil Association

To subscribe to the Groundswell Sessions at the Regenerative Farmer Substack:
https://regenerativefarmer.substack.com/

Watch the session here:

NEW UPDATES FOR AGRII'S CONTOUR PLATFORM HELP MANAGE SFI CHANGES TO ROTATIONS

By Ben Foster, RHIZA Product Manager

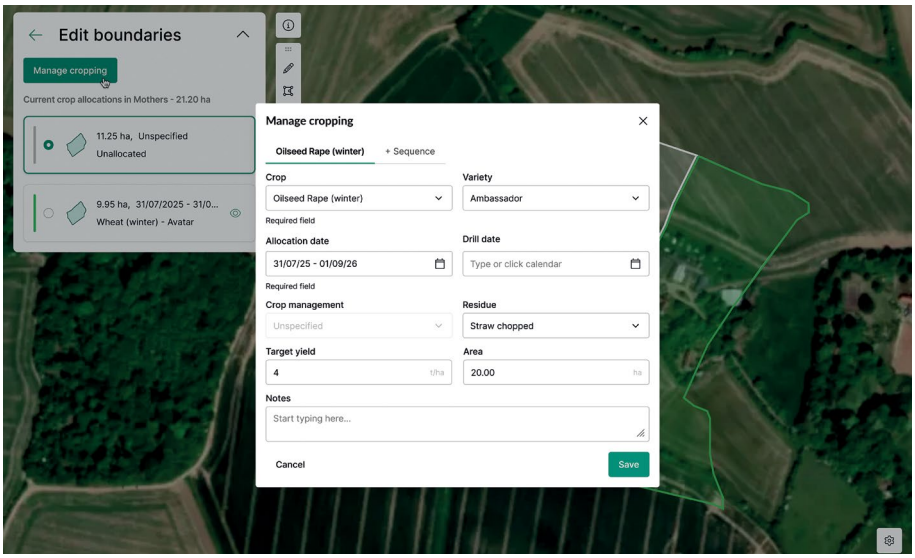
Rotations are changing, and farm management systems need to change with them to help farmers manage their data effectively. According to the latest DEFRA figures on the Sustainable Farming Incentive (SFI) actions uptake, there are 32,200 active SFI agreements, taking 3.4% of England's utilised agricultural area out of food production. That is a lot of flower-rich margins, grassy field corners and winter bird food.

Additionally, an unprecedented 3,270,000 Ha of agricultural land is signed up to the 'Assess soil, produce a soil management plan and test soil organic matter' (SAM1 and CSAM1) actions. This covers 38% of England's agricultural area. Combined with the most popular action from the expanded SFI offer, which is 'Variable rate application of nutrients', there is a much greater emphasis on farm management systems to adapt to the increasing complexity farmers are facing.

That is why Agrii's RHIZA team is developing two new additions to its Contour digital platform: flexible cropping and the land use mapping tool.

Flexible cropping

Flexible cropping has just been released. It allows users to split fields, merge areas and edit boundaries. The process



Ben Foster, RHIZA Product Manager

of entering cropping into fields is also much quicker, and it will enable crop sequencing — for example, a cover crop into a spring cereal.

Further developments to the crop sequencing functionality will also make Contour the most usable digital system for grassland management. Farmers will be able to log each cut of silage or hay for a field and manage the nutrient requirements after each.

For SFI to deliver the maximum value for a farm's bottom line, it needs to be as easy to manage as possible, and the Contour platform allows that. These changes will allow farmers to proactively manage the integration of SFI actions alongside their farm production and have the data all in the same space.

Flexible crop management forms one of the key pillars that support the ongoing integration project with the new TELUS Crop Management (TCM) platform. Once Contour and TCM are synchronised, changes made in either platform to fields or cropping can be passed between the two platforms, meaning no double data entries, which is a huge frustration for many farmers.

Land use mapping

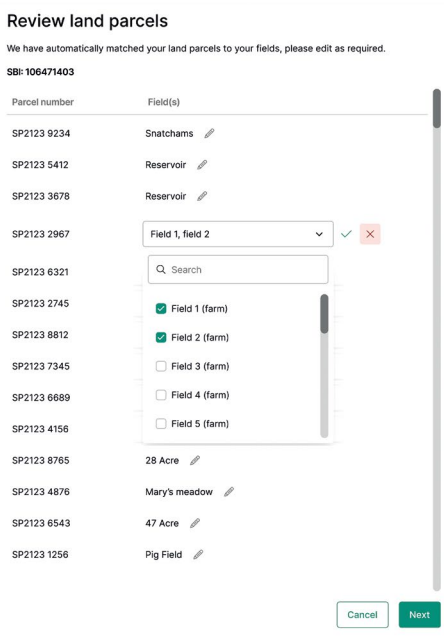
An ongoing development within Contour, the land use mapping tool can be used to manage any land on a farm or estate that is not in production. That could be hedgerows, ponds, woodland, wetlands or field corners in environmental stewardship. It is designed to go hand-in-hand with the crop management functions already in Contour, and, when launched, farmers will be able to easily manage the SFI actions involving land not in food production.

For example, the CHRW3 'Maintain or establish hedgerow trees' action is worth £10 per 100m of an eligible hedgerow, which can add up to a decent amount for many farms. However, it requires detailed mapping to ensure compliance. Contour's land use mapping tool will enable this without requiring farmers to adopt yet another digital platform.

It is aimed at not just being an SFI tool, but also for estate management. We want farmers to use it for overall land management, capital grant schemes and health and safety, such as mapping pipelines, pylons and other hazards on the farm.

Existing environmental tools

There is an environmental module already available within Contour. This allows farmers to complete an integrated pest management plan or a soil management plan, which are compliant with SFI. Alongside these tools is the Nutrient Management module, where nutrient management plans and variable-rate nutrition plans can be created.



Earlier this year, TELUS Agriculture, the global telecoms business that acquired Gatekeeper and Muddy Boots, announced the development of TELUS Crop Management, which will eventually succeed its existing platforms. Ben Hatton, TELUS Agriculture sales manager, explains the move.

"We view farm management software as a specific function. It's all about workflow: keeping farm records, traceability, compliance, assurance records, connecting with agronomy advice and tools for agronomists, and providing insight into gross margin and costs. It also needs to deliver this down to the farm, field, crop and variety level.

"Our partnership with Agrii and RHIZA is fantastic because we aren't specialists in agronomy advice. There are numerous firms that deliver exceptional levels of insight and advice, such as RHIZA, but there's also a need to do the audit trail, compliance and cost analysis, which is what we take great pleasure in doing."

Ben believes that digital tools that are integrated into farm management systems provide significantly greater value to farmers than those that are standalone.

FARMER FOCUS TOM MARTIN

I should begin with a declaration: I'm a fan of Groundswell. (I cheered the Cherry family when the event won the Food Innovation Award at the BBC Food & Farming Awards last December.) I've attended since it was little more than two blokes and a spaniel (OK, a few hundred people in year one), and over time I've graduated from a one-day guest to full-on festival devotee. I roll in on Tuesday evening before the first day to bag a camping spot and stay until breakfast on Friday morning. I pore over the programme; highlighting talks I want to attend and exhibitors I want to meet. I count the event as the annual highlight of my regenerative-farming journey.

Over the years, I've picked up a few tricks: showering mid-afternoon; hitting food vans in quiet windows; nibbling, Hobbit-style, four times a day; packing sunscreen (no mistaking the sunburn) and a wind cheater for cold evenings. And yes, I love it.

This year, I had extra buzz. I was hosting the final Big Top slot: the Groundswell 2025 Cheat Code Session, turning the mic to the audience to share their takeaways. I invited rural commentator Rob Yorke and vet-turned-farmer Claire Whittle to reflect from the stage, and then coaxed (encouraged, cajoled) the audience to share their highlights, lightbulb moments and even camping woes (spoiler: an invasion of earwigs!). Some were first-timers, others, seasoned pilgrims. Everyone reflected differently, from headliner talks to food van tips.

Yes, people came for the headliners — but left talking about the side shows. Dirt to Soil author, Gabe Brown, was deeply inspiring; the then-DEFRA secretary, Steve Reed, was bold in showing up (if at times delusional); and Prince William's appearance remained a delightful surprise. But for me, the small conversations and fringe sessions lingered longest.

One such session in the Soil Tent — a more modest space — was on Measuring Food Quality, Nutrition & Health. Dr David Unwin spoke passionately about the outcomes of prioritising diet vs medical intervention. He told the audience that the average taxpayer carries a £7,000 burden for the health costs of junk food:

"Cheap food is actually expensive when you take account of health."

I left feeling a bit alarmed — but also inspired to tend not just my fields, but my own health. It struck me that farms are, in many ways, expressions of ourselves: they reflect our ethos, our sense of worth and our commitments to community and land.

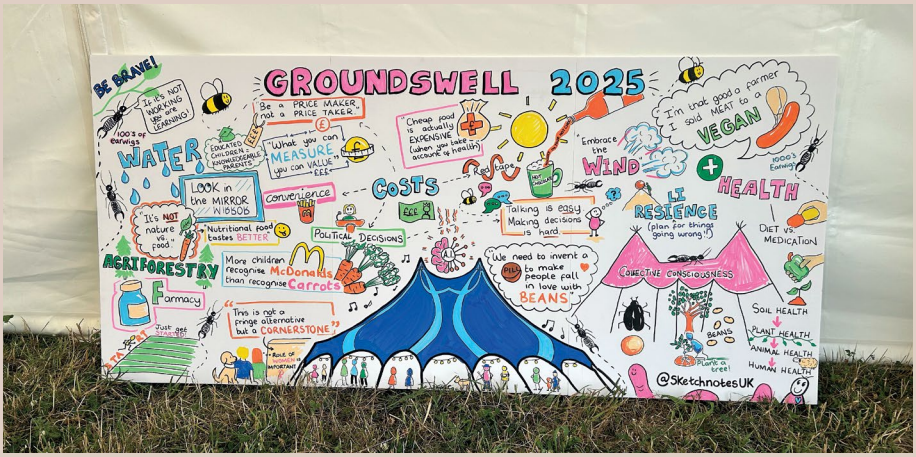
Another unexpected highlight was a session called Couples Therapy, in which two farming couples unpacked their highs and woes, offering practical advice on navigating work and life

together. In a world that puts so much emphasis on technical solutions, it felt refreshing (and essential) to talk about relational foundations.

On the bigger stage, I also caught a panel hosted by The Food Programme's Sheila Dillon with Hodmedod's Josiah Meldrum and, in his unvarnished manner, Henry Dimbleby talking excitedly about beans and pulses as a tonic for the national diet and agricultural rotation alike:

"We need to invent a pill to make people fall in love with beans."

Meanwhile, Professor Tim Lang's talk on the looming possibility of



"polycrisis"— the idea that multiple system failures may cascade — was a wake-up call. The takeaway: other nations are better prepared; we'll have to catch up fast.

A quick scan of the programme reinforces what Groundswell has always promised: soil health and regenerative principles are central, but the event also embraces nature integration (biodiversity, habitats), innovation and tech, supply chains and market structures, policy and land use, resilience and adaptation — and this year especially, narrative, culture and wellbeing.

What's interesting is how the festival itself mirrors this: it's not simply a technical expo but a holistic gathering that bridges ecology, farming, economics, social change, culture, health —and the everyday lives of people who farm. It speaks to transition — not just in methods, but in worldview.

I was especially pleased to see a thread — shared by Steve Holloway in his critique Groundswell Isn't Perfect — But It's Asking the Right Questions — that resonated deeply with what I saw. He writes:

"One of the main jabs is that Groundswell isn't based on hard science…Actually, it's ahead of the science. What we are seeing, time and again, is farmers sharing consistent improvements: better structure, better water retention, reduced inputs and more resilient crops." SFS

He acknowledges that some cynics seize on the lack of neat trials and label the movement "unscientific", but counters forcefully that complex ecological systems don't always yield simple variables. He argues that farmers today are often ahead of the science — testing, observing, iterating — and that seeing biological and structural improvement repeatedly across farms is hard evidence in its own right. Some will critique that view; I believe it's a vital and true perspective. Groundswell may not be perfect, but it's a space where experimentation, critique, and curiosity are alive — and that is more essential than having every answer tomorrow.

With over 200 sessions representing perhaps 150+ hours of teaching, conversations, demonstrations and panels, the festival feels like many conferences in one compressed two-day span. And yet, what stays with me isn't just the content — it's the space between sessions: the bar chats, the queues at food vans, the serendipitous meetings and the shared energy of ten thousand regenerative-minded farmers, thinkers, tinkerers.

If only the bar hadn't blurred some late-night memories with cider haze. Still — I'll be back, and next year I expect I'll sweat, muse, plot and dream more than ever.

THE COST OF UNCERTAINTY: HOW INHERITANCE TAX CHANGES HAVE FROZEN FARM INVESTMENT

Written by Chris Fellows based on a TFF Survey

Summary

A new survey of 687 UK farmers has revealed deep concern and widespread hesitation across the sector, following the proposed Inheritance Tax (IHT) reforms announced earlier this year:

- **83%** of respondents reported delaying or reducing investment.
- Average estimated investment reduction per business: **circa £70,000 per year for next the four years — that's £280,000 per business over four years**.
- Extrapolated across the UK's farms, that equates to over **£20 billion of lost or postponed investment over four years**.
- **Machinery and infrastructure upgrades** have been hit hardest, with ripple effects on local suppliers, contractors and mental wellbeing across rural communities.

The results paint a clear picture: uncertainty around the rules for Agricultural Property Relief and Business Relief is having a **profound chilling effect** on rural business confidence.

Note: we estimate our figures will be accurate to within ±3.7 percentage points.

Key Themes

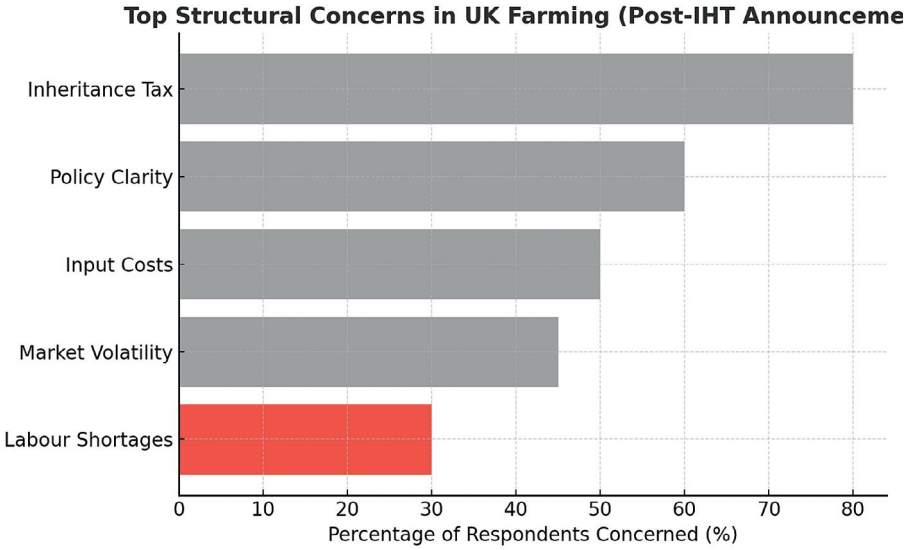
The overwhelming message from farmers was one of **paralysis**. Many said they are "battening down the hatches" and holding off on spending until they know how the new inheritance tax regime will work in practice.

Even those who had healthy cashflow or good harvests described putting everything on hold, fearing the potential tax implications for family succession. The sentiment could be summed up in one farmer's comment:

"Why risk spending £100,000 now, when I don't even know if the farm will stay intact after I'm gone?"

Machinery Investment

The clearest area of slowdown is **machinery purchases**. Nearly two-thirds of respondents mentioned either postponing or scaling back new machinery investment.



Dealers are already reporting lower order books, and many farms said they were opting to **repair or rebuild** older kit instead of buying new. One respondent wrote simply:

"We'll keep the tractors running until they die."

Several others referenced cancelled deals for combines, drills and loaders — some worth hundreds of thousands of pounds. For the machinery trade, this signals a potentially sharp downturn if uncertainty persists through 2026.

General Investment

Beyond machinery, farmers are freezing wider capital spending:

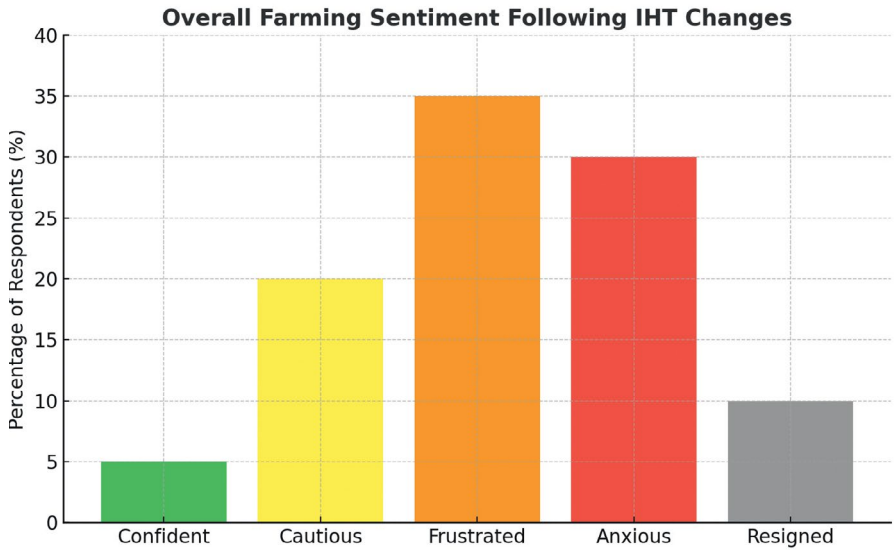
- New sheds, barns and grain stores are on hold.
- Diversification plans such as holiday lets, farm shops and solar installations have stalled.
- Infrastructure and drainage projects have been paused in over 40% of responses.

A common refrain was that investment decisions that normally "tick along year by year" have now been "put in the drawer until further notice."

This broader pullback represents not just lost revenue for suppliers and builders, but a **structural slowdown in rural development**.

Knock-on Effects

The knock-on effects are already spreading through the supply chain. Contractors, machinery dealers, building firms and rural consultants all rely on farm investment to drive their own turnover. If each farm's £70,000 pause translates into £5-7 billion nationally, the true impact could be closer to **£10 billion once secondary**



effects are included — money that would have circulated through rural economies.

"It's not just us," one contractor said. "When farmers stop spending, the whole village feels it."

Mental Health and Morale

Perhaps the most sobering aspect of the responses is what they say about morale. Comments like "everyone's in bad form" and "it's killing farms and farmers" were common.

Many see the IHT proposals as a **symbolic blow** — another example of policymakers misunderstanding farming's long-term, family-based nature.

The uncertainty and perceived unfairness are feeding frustration and anxiety, especially for those nearing retirement or trying to bring the next generation into the business.

Succession Planning

Succession is the heart of the issue. Over half of respondents mentioned **delaying or rethinking their family succession plans**.

Farmers described halted handovers, postponed partnerships and families "putting everything on ice" until clarity returns.

In several cases, families that had already completed legal restructuring are now paying again for new advice, adding cost and confusion.

Consolidation and Farm Sales

A smaller but significant group (around 10%) indicated they might **sell or fragment landholdings** as a result. For some, this is a defensive move to simplify estates; for others, a reluctant step after decades of building up family assets.

Land agents are reporting an uptick in "quiet" conversations about sales — not panic selling, but cautious enquiries about options if the rules stay as proposed.

Make Do and Mend

A recurring theme was the return of the **"make do and mend"** mindset. Farmers are stretching machinery lifespans, refurbishing old buildings and deferring technology upgrades.

While farmers are experts at coping, this mentality signals a step backwards in productivity, efficiency and sustainability — areas where UK farming had made strong gains in recent years.

Broader Structural Concerns

Beyond inheritance tax itself, many farmers see this as part of a **broader erosion of confidence** in long-term agricultural policy.

With environmental schemes still in flux, commodity markets volatile and input costs high, the IHT issue has become the final straw for some.

There's a sense that the UK's farming policy is failing to give families the stability needed to invest for the next generation.

Overall Farming Sentiment

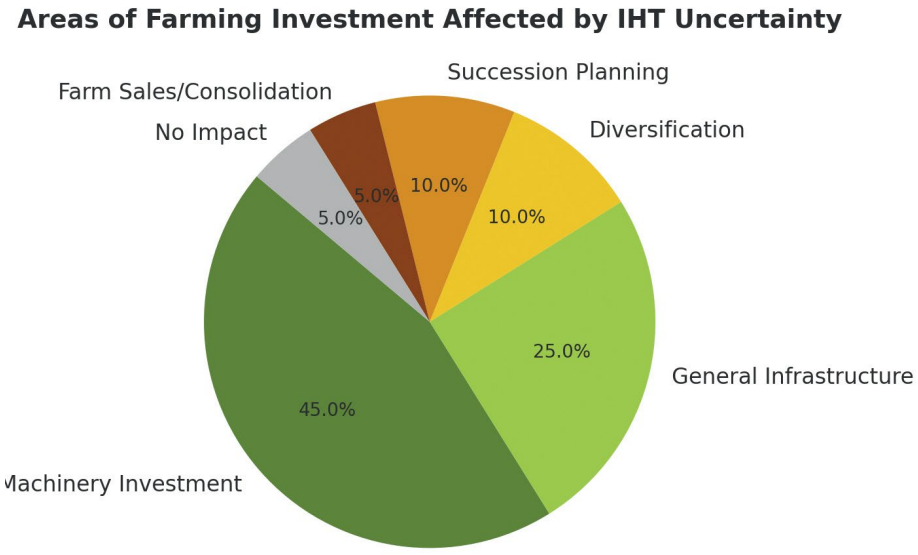
If this survey is a barometer, it's showing stormy weather ahead. Confidence is low, investment is stalling and optimism is being replaced by cautious pragmatism.

Yet despite frustration, there remains resilience. Many respondents said they will **"carry on regardless"**, hoping that the government will listen and adjust the policy before lasting damage is done.

The message is clear:

Farming doesn't need handouts — it needs **clarity and confidence** to invest in the future.

Until that happens, billions of pounds in rural investment will remain locked behind a wall of uncertainty.



FARMER FOCUS
BEN MARTIN

I am sat here writing this and it's raining; raining for what feels like the first time this autumn! But I am sat here content. Land work here in East Anglia is generally all up to date, and it's finally a quieter week for most of the arable farming network.

2022 was the only time in my farm management career that I got all operations finished in October. Potatoes lifted ✓ Cereals all drilled ✓ Land all rolled ✓ Herbicides all sprayed ✓ Now, after a couple of hell-like autumns, 2025 has taken 2022's title of being the most straightforward autumn (and all summer, if we are being honest) that I have experienced in farming.

It would be remiss of me not to mention how dry it's been. We are just over half the average amount of rainfall to date this year.

It has been two years since I last wrote for Direct Driller. I was then one year post-leaving full-time employment and still exploring paths to take. I can now confidently say I have found a balance where I am happier than I have been for a long time.

My working time is split nicely between building my business, Thrive In Farming, and carrying out operations on a 3,300ha arable business in West Suffolk — a split that works for me perfectly. I have always enjoyed hands-on farming, which I am still able to do, but having my own business as well gives me the flexibility I crave. There is no ceiling to what I can earn or achieve with it, and that is the most exciting element for me, compared to my previous employed life.

The big x9 making a start cutting winter barley on 26th June!

Tea on the go whilst drilling wheat

Farming-wise, over the past few months, it has been busy but relatively straightforward. Spring drilling was completed in perfect conditions in late February. I established 400ha of oats and barley with the 12m Condor drill into land that was cultivated the previous summer and sown with an over-winter cover crop. Doing that cultivation well ahead of winter is the key to this system and allows us to then direct drill in the spring and conserve moisture in the seedbed.

Combinable harvest started on the 26th of June, this being the earliest start to a harvest that I have ever been involved in. With land being cleared early, this gave us a fantastic window to get summer catch crops drilled. The 12m Avatar did this with ease into extremely dry seedbeds; however, it was several weeks and well into August before these catch crops got going.

OSR was sown for the first time in a few years; this was all mixed with some companions. Fifty per cent found some moisture and got away. A quick decision was made not to persevere with the very poorly emerged crop, and this was turned around and drilled with WC triticale.

Autumn drilling was carried out with three drills: the Condor, Avatar and a new Horsch Finer, the latter doing most of the drilling into cultivated ground. Having the large tine drill and disc drill, complemented with the mounted tine drill, meant we were always on top of drilling and could do 200ha days when needed — which was not that often this autumn, if truth be told! But it's reassuring that the capacity is there when needed!

The Claydon drill made an appearance towards the end of drilling, to establish 70ha of wheat following sugar beet. A quick pass with the carrier to level things and then straight in with the Claydon was all that was needed after the beet was lifted in fantastic early conditions.

So now that field work is nearly all wrapped up (there is about 60ha of wheat to do after the next beet lift), my focus turns to my recruitment and

Emerging crops poking through last year's rows of stubble.

retainment work. I have worked with some fantastic farm businesses over the past two years, finding them good people to fill important roles and helping them to keep great people.

I am very bullish about the fact that I firmly believe there are lots of amazing jobs on farms around the UK AND there are lots of very skilled and exciting people out there that want to have careers on farms. What I am trying hard to do is connect these people and businesses — something which I think has been needed for a while now.

Staying with the theme of this publication, over the past 18 months, I've helped fill two roles centred around supporting farm businesses as they transition to regenerative farming systems. Both were taken on by highly talented and driven women who are already making a huge impact on their farms. It's brilliant to see forward-thinking farms investing in people who can help drive change from the soil up!

Other exciting things on the timeline for this winter...

- Attending my first OFC. I have been kindly invited to be part of a panel which will discuss Skills & Opportunities in the Food & Farming Sector.
- Launching a brand-new network aimed specifically at farm staff. My goals are to bring people together and build a community where farm staff can develop, learn and lean on each other (and me!).
- Building on the fun I had over summer with sharing recipes and meal ideas from my tractor cab — look out for a recipe ebook that will bring together my (and invited others') ideas for simple, high-protein recipes.

Despite the dry weather making things feel straightforward for operations this summer and autumn, it has still felt like a very drawn-out affair. The early harvest and lack of wet days have meant working hours haven't been crazy, but at the same time things seem to have just carried on ticking over — if

Catching a bit of family time one lunchtime during harvest

that makes sense?! R&R should now be at the forefront of most people's minds. I, for one, am looking forward to getting back into my winter routine: more dog walks, more family time and more time focused on doing the things I love outside of farming!

Take care

Ben

IG - @thriveinfarming

Linkedin – Ben Martin

THE FOUR WEAKNESSES OF ERGOT

Jason Pole, AHDB Technical Content Manager, explains how knowing what makes the ergot pathogen tick can help target management to reduce disease pressure, limit crop infection and keep clean grain clean.

Ergot (Claviceps purpurea) grows in and replaces grain with its own fungal tissues, which eventually form a hard, purple-black sclerotium (with a white interior) known as an ergot. They grow up to 2 cm long and can be easily spotted in infected ears and grain.

Although the disease has little impact on cereal yields, ergots are associated with large amounts of mycotoxins (alkaloids) that are highly toxic when ingested (by humans and livestock). This is why there are contractual limits in place for ergot by weight for feed grain and zero tolerance for all other grain in GB.

In 2022, the EU implemented stricter levels for specific cereals and products traded in the EU (which also covers Northern Ireland). It introduced maximum levels (MLs) for ergot alkaloids for the first time, which can be detected in grain with no visible ergot symptoms and provide a tougher test for grain quality. With potential for further restrictions in GB, we need to keep ahead of the challenge.

As for any crop disease, seasonal pressures ebb and flow. Harvest 2024 crops contended with some very cool and wet periods that promoted spore production and prolonged the flowering period (making infection more likely) with numerous reports of ergot in grain. In contrast, the widespread hot and dry conditions have helped keep ergot infection down this year. Ergot's impact on harvest 2025 crops will be assessed as part of our long-term project, which has monitored key contaminants in post-intake grain samples (wheat, barley and oats) and co-products (wheatfeed and oatfeed) since the mid-1980s.

Last autumn, we commissioned a rapid review of ergot management evidence (AHDB Research Review 102) to fine-tune our guidance for farmers. The ADAS-led project identified four key management strategies targeted at various points in the ergot life cycle.

Ergot life cycle

1. Over the winter, ergots stay dormant in the soil or on crop debris (ergots may also be in drilled seed).
2. In the spring and summer (after a period of cool/vernalisation), ergots near the soil surface (<5 cm deep) germinate and produce mushroom-shaped, spore-bearing structures (called stroma).
3. The stroma heads feature asci-containing perithecia, which contain (sexual) ascospores.
4. The structure ejects the ascospores, which are carried on the wind (most travel less than 20m from the spore source).
5. When these primary spores land on open flowers of susceptible cereals and grasses, they germinate and penetrate the stigma hairs.
6. Fungal hyphae grow down into the ovary.
7. In the ovary, the fungus produces a soft, white hyphal mass and secondary (asexual) spores (conidia) encased in a sweet-smelling, sticky secretion – commonly referred to as honeydew (which can promote the development of moulds).
8. Honeydew attracts insects that carry conidia to other open flowers, where further infection can occur (rain-splash and physical contact can also spread spores).
9. Infected seed is replaced by a relatively large, protruding ergot (the process takes about two weeks), which may fall to the ground (and become dormant over the winter) or be retained in the ear and harvested with healthy grain.

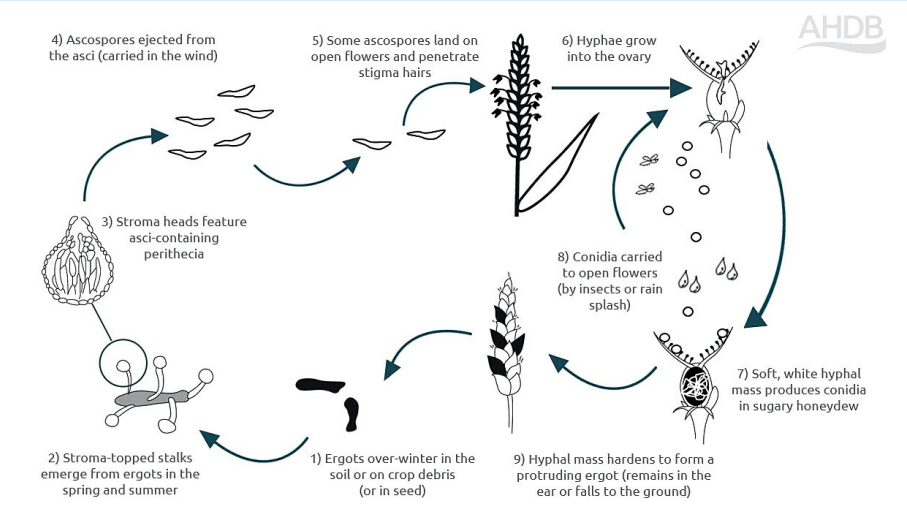
The four ergot management strategies

1. Reduce initial inoculum

The first step is to monitor fields and margins for ergots to determine the initial risk level. The second step is to reduce the amount of ergot and its viability to limit the production of primary spores.

You may need to be prepared to use metal in high-risk fields to bury ergots to a depth of at least 5 cm. Although ploughing is best, minimum tillage is more effective than direct drilling. Once ergots have been driven down the soil profile, you should avoid cultivation in the following year to avoid them resurfacing. Typically, ergots remain viable in the soil for one to three years.

To avoid introducing new ergots to the field, it is important to clean machinery after working in infected fields and to use high quality, clean seed. Either use certified seed or clean, home-saved



The life cycle of the ergot pathogen

Ergot on wheat

seed. Although there are some seed treatments that cite ergot suppression on their labels, they do not provide complete control. Additionally, there are no sprays authorised for ergot management in the UK.

2. Reduce infection risk

With primary spores minimised, the next step is to adapt the rotation to reduce infection events. In the highest-risk situations, consider growing a non-cereal crop or a less susceptible cereal crop. From least to most susceptible: oats (infection is rare), barley, wheat, triticale and rye. As for any crop, the usual techniques to get it off to a strong (and uniform) start and to maximise crop health are essential (eg appropriate crop protection and nutrition programmes).

Compared with some of the potentially yield-reducing foliar diseases, breeding for ergot avoidance or resistance has not been a key target for plant breeders and information on varietal risk is extremely limited. However, selecting varieties that have a short flowering period (note: late tillering and secondary tillering can extend the flowering period), a more closed flowering habit and a high pollen-shedding ability could help contribute to a reduction in ergot infection. Crops become resistant to infection a few days after fertilisation.

3. Reduce secondary spread

Grasses in your margins or grass weeds in your fields may become a source of secondary spores and spread of ergot. The full review report includes excellent details on the ergot risk associated with various grass species – either as weeds or components of margin seed mixtures. Of course, mowing or topping grasses regularly (if permitted) will also drive down ergot pressures, especially to prevent the infection of late cereal tillers at field edges. As black-grass flowers earlier than cereals, it is a key weed target for ergot management.

4. Reduce contamination

The final step is to know where ergot is in your fields (including margins) and to manage infected grain to keep clean crops clean:

- Harvest infected areas separately
- Segregate infected grain from other grain
- Clean equipment after harvesting infected grain
- Clean contaminated grain
- Update records to track higher-risk fields/areas

Field headlands and tramlines are often higher-risk areas (which tend to have plants with more susceptible late and secondary tillers).

Several methods can clean grain to some degree, including gravity separation (with or without an air screen cleaner) and mechanical sieves that remove foreign bodies. Grain colour sorting systems are also available, which are used mainly by processors and within central stores. As ergot fragments can be relatively small, it means cleaning may be only partially effective.

Black ergot sclerotia in a bag removed from the grain using colour sorters

Black Grass and Ergot

Further information

The ergot review was funded via a levy-payer-led commissioning process and developed with input from the Ergot Working Group, which is chaired by UK Flour Millers (UKFM). The full ergot guidance includes an assessment of the potential impact of each intervention, highlights areas of uncertainty and cites key research gaps.

Access the management strategies and review at **ahdb.org.uk/ergot**

AN INVERSION **CONVERSION**?

By James Warne

Some of you may be aware that Steve has taken a small step back from running Soil First Farming in recent years. I have been left to steer the ship and try to keep the business true to its original aims. More recently, Paul has joined us, and between our relative youth, and inexperience, he and I have been pondering whether we are doing the right thing. Our research has led us to alternatives to no-till and Conservation Agriculture. In this brave new world, we have discovered cultivation and, in particular, ploughing. So much so, I decided to have a crack at it and enter our local ploughing match. This didn't end well, with the tractor breaking down that morning before I had turned a furrow. Maybe this was the hand of our illustrious leader trying to tell me something...

Ploughing is the agricultural equivalent of a confident handshake: decisive, noisy and impossible to ignore. It demonstrates commitment to the soil, asserts human mastery over unruly nature and produces an unmistakable pattern of furrows that signal competence to neighbours, funding bodies and passing drones. Ploughing solves problems the moment they are named by creating a spectacularly obvious solution: turn everything over, bury the past and make the land look as if something significant has been done.

The first practical virtue of ploughing is its theatricality. Nothing raises spirits like a field transformed from disorderly green chaos or uncertain mud into neat, repetitive rows. That aesthetic clarity is essential in a world that values visible action over quiet, long-term repair. A ploughed field reads as progress in any weather. It is proof that someone showed up with heavy machinery and made a deliberate intervention, which comforts investors, satisfies inspectors and reassures anyone whose mental model of farming

begins and ends with a tractor.

Ploughing is also wonderfully egalitarian in its approach to problems. If weeds exist, ploughing buries them. If crop residues linger, ploughing buries them. If soil has the audacity to be compacted or mixed with inconvenient stones, ploughing buries the memory of that problem under a new layer of rearranged dirt. Ploughing spares no one: weeds, pests, residue and historical evidence of neglect — all receive the same treatment. This wholesale erasure simplifies decision-making; there is no need to debate subtle soil chemistry when you can simply bury it and start again.

There is also a persuasive comfort in returning the soil to a predictable structure.

There is also a persuasive comfort in returning the soil to a predictable structure. The plough imposes a geometry that transforms an indecipherable ecosystem into a grid that humans can read, measure and sell. Once the field has been disciplined into straight lines, the rest of agricultural technology can perform without awkward improvisation. Efficiency is not just achieved, it is staged.

Ploughing excels at producing immediate, measurable outcomes. You can measure the depth of inversion, the area covered per hour by the tractor and the number of clods larger than your fist. Those metrics translate into quarterly reports and grant applications that celebrate measurable change. Ploughing makes success visible and auditable. It is the kind of activity for which photographs can be taken and drone footage commissioned, which is crucial for an era that rewards the spectacle of intervention as much as the long-term resilience it purports to create.

Ploughing is an excellent teacher of humility for soil. It communicates that humans can and will alter landscapes, that ancient organic layers are temporary and that the past can be rearranged with a hydraulically assisted shrug. For those who prefer solutions that do not require patience, ploughing offers the intoxicating satisfaction of immediate alteration. It is the fast-food option in a world of slow-cooked soils: convenient, efficient and undeniably filling in the short term.

Economically, ploughing makes a robust case. It allows predictable seed placement which, in turn, permits predictable yields under favourable conditions. Predictability is the currency of markets, and when yields can be confidently forecasted thanks to a disciplined seedbed, the farmer's financial statements look neat. Ploughing also simplifies labour scheduling; it concentrates heavy work into a window where specialists can be hired, machines deployed, and the entire operation planned with military-like precision. Ploughing turns farming into a series of tasks with clear starts and ends, which financiers find comforting.

Economically, ploughing makes a robust case. It allows predictable seed placement which, in turn, permits predictable yields under favourable conditions.

Critics will invoke slow processes, microbial communities and long-term carbon stocks, but ploughing offers a counterargument grounded in pragmatism. If the immediate goal is to establish an economic crop, suppress a problematic weed flush or satisfy contractual obligations, ploughing provides a reliable route to those ends. Long-term soil health is a worthy conversation, but it is one we can politely schedule after the harvest. Ploughing ensures the harvest happens at all.

Ploughing also has a philosophical charm. It treats the earth as a partner that sometimes needs firm direction. It is a visible negotiation between human intention and natural variability where human will, expressed through steel and horsepower, imposes order. This interplay is satisfying for those who prefer decisive gestures to diffuse stewardship. Ploughing affirms that humans can leave a mark that is both functional and unmistakably human-made.

Ploughing is a story-maker. Furrowed fields are cinematic. They feature in literature, advertising and political rhetoric as metaphors for diligence, productivity and the moral clarity of turning the earth for food.

Finally, ploughing is a story-maker. Furrowed fields are cinematic. They feature in literature, advertising and political rhetoric as metaphors for diligence, productivity and the moral clarity of turning the earth for food. Ploughing supplies images and language; it helps to build narratives of care, labour and continuity. The symbolic value of a freshly ploughed field often outweighs the slow accrual of intangible benefits that cannot be photographed for social media.

Ploughing is a great idea because it acts fast, looks decisive and provides measurable outcomes in a world that values visible proof of action. It flattens complexity into a manageable problem set, delivers immediate utility and satisfies both economic and cultural expectations. It honours a tradition with dramatic gestures and leaves behind a field that reads like a promise. Ploughing is not always the only option, but it is the one that makes the loudest, clearest statement: we worked the land, we prepared for tomorrow and we prefer certainty to nuance. Maybe we're not onto something after all.

THE FUNGUS THAT FIGHTS BACK: HARNESSING SOIL BIOLOGY TO TACKLE CROP DISEASE

Based on a paper by Dr Gareth Thomas et al., Rothamsted Research, University of Exeter and University of Warwick — adapted for Direct Driller readers

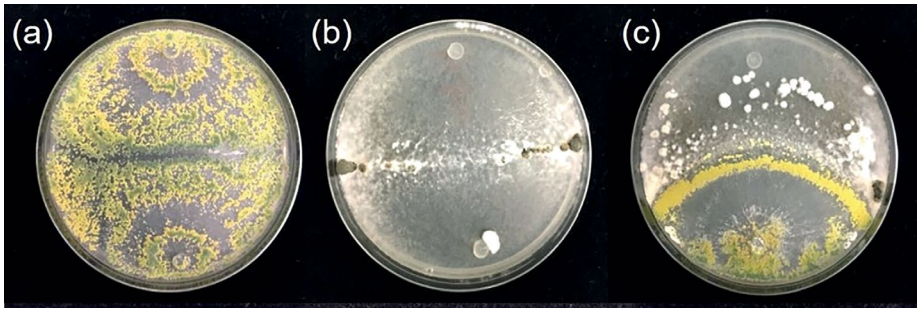
Across the UK, farmers are dealing with one of the most stubborn and costly fungal problems in modern agriculture: Sclerotinia sclerotiorum. This soilborne disease causes white mould and stem rot in more than 800 plant species, including oilseed rape, potatoes, lettuce, beans, sunflowers and carrots. Once it gets into the soil, it can sit there quietly for years before striking again, often when conditions turn warm and damp.

Traditionally, fungicides have been the main line of defence. But as everyone in the industry knows, chemical options are becoming fewer and resistance is becoming more common. Farmers are being pushed to find new solutions that are both effective and sustainable. A new study from Rothamsted Research and its partners suggests that help may already be living right beneath our feet.

Meet Trichoderma – the farmer's microscopic ally

Healthy soil is teeming with life, much of it invisible. Some of these organisms work in our favour, helping crops to take up nutrients, improve structure or fight off disease. Among the most useful are fungi from the genus Trichoderma, which have been studied for decades for their ability to suppress harmful fungi and stimulate root growth.

One particular strain, called Trichoderma hamatum GD12, originally isolated from a potato field in Devon, has shown a natural ability to stop Sclerotinia from growing. It doesn't just compete for space or food; it actively shuts the pathogen down. Researchers wanted to find out how it does this and what makes it so effective. The answer, as it turns out, lies in chemistry — or more precisely, in smell.



Dual-culture confrontation assays of (a) self-challenged Trichoderma hamatum GD12 strain; (b) self-challenged Sclerotinia sclerotiorum (c) co-culture of S. sclerotiorum (top) and T. hamatum GD12 (bottom).

How fungi talk — and fight

When soil fungi encounter each other underground, they do not just physically touch or compete for resources. They communicate using chemical signals. Some of those signals are volatile organic compounds, or VOCs, which can move through air spaces in the soil. These are the same kinds of compounds that give mushrooms their earthy smell or fresh grass its green scent.

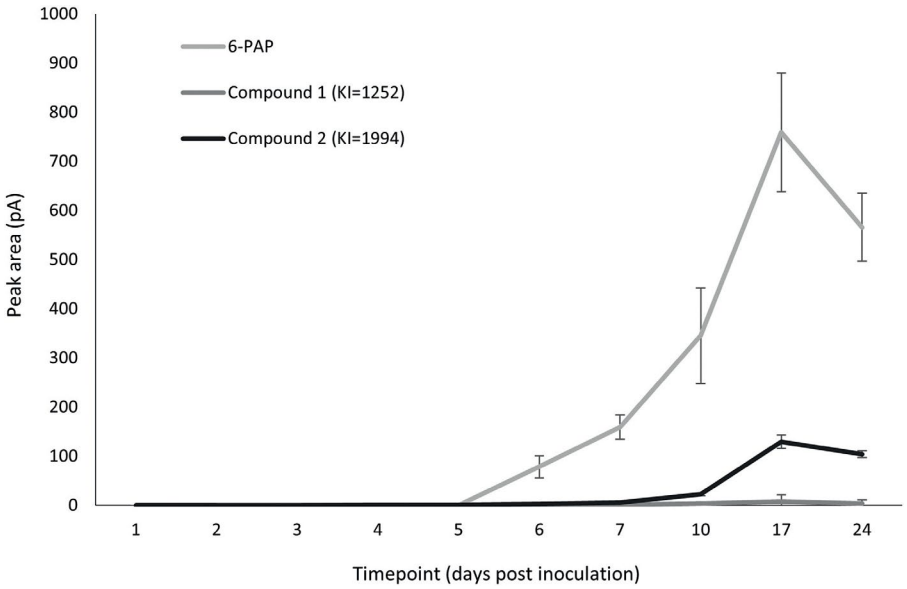
The Rothamsted team grew Trichoderma hamatum GD12 and Sclerotinia sclerotiorum side by side in Petri dishes to recreate this underground interaction. After a week, they saw that the two fungi had reached a stalemate, with Trichoderma producing a clear yellow band of spores along the contact line. To find out what was happening, they captured the gases being released and analysed them using highly sensitive instruments.

The result was striking. When Trichoderma was grown on its own, it released a certain pattern of VOCs. But when it grew in the presence of Sclerotinia, the entire chemical profile changed. The fungus was clearly responding to the threat by producing a much more complex mix of airborne compounds, many of which are known to have antifungal properties. In effect, it was fighting back using smell.

The discovery of 1-octen-3-one

Among the dozens of compounds detected, one in particular caught the scientists' attention: 1-octen-3-one. This chemical, which also gives mushrooms part of their aroma, turned out to be a potent antifungal agent. When tested on its own in laboratory conditions, it completely stopped Sclerotinia from growing. Even when diluted 100 times, it still prevented the fungus from developing.

Better still, the same compound also stopped the growth of several other major crop diseases, including Botrytis cinerea (grey mould), Pyrenopeziza



Production of VOCs in treatments of Trichoderma hamatum GD12 and Sclerotinia sclerotiorum co-culture treatments over the course of 24 days for three VOCs. Bars represent the peak area value of each VOC (± SD) (n = 3).

brassicae (light leaf spot on oilseed rape), and Gaeumannomyces tritici (take-all in cereals). This suggests that the chemistry behind Trichoderma's natural defence system may have far broader potential for crop protection.

When the fight begins

The researchers found that this chemical battle peaked about 17 days after the fungi were first introduced. That is when Trichoderma was most actively producing defensive volatiles. More than 30 compounds were identified in total, with over 20 appearing only when Trichoderma was confronting Sclerotinia. Some, such as 6-pentyl-2H-pyran-2-one (which smells faintly of coconut), are known to promote plant growth. Others, like 1-octen-3-one, were newly detected in this species and proved to be highly toxic to the pathogen.

This shows how complex and dynamic these interactions are. When the friendly fungus senses danger, it activates "silent" gene clusters that start producing a cocktail of natural chemicals. These can act as signals, repellents or weapons depending on the situation.

Why this matters for UK farming

For British farmers facing growing disease pressure, this kind of research could point towards a new approach to crop protection. Volatile compounds travel easily through soil air spaces, which means they can influence pathogens even at a distance from plant roots. If these gases work the same way in field soils as they do in the lab, they could form the basis of a biological fumigant — a natural alternative to chemical sprays.

This fits well with the direction of travel for the industry. The Sustainable Farming Incentive's new Integrated Pest Management (IPM) actions reward growers who reduce their dependence on synthetic products by using natural solutions. Encouraging beneficial microbes like Trichoderma could soon become part of how farms demonstrate IPM in practice.

The practical takeaways

There are several clear lessons that farmers can take from this research:

1. Healthy soil biology is your first defence. Beneficial fungi like Trichoderma are part of the soil food web that naturally suppresses pathogens. Regular use of diverse cover crops, reduced tillage and organic amendments can help maintain this biology.
2. Microbes work best in communities. The study showed that Trichoderma's chemistry only fully switches on when it senses another fungus nearby. Diverse microbial systems seem to "wake up" defensive chemistry that stays dormant in sterile conditions.

3. Natural chemistry could replace some synthetic inputs. Rather than relying on broad-spectrum fungicides, future disease management might use biological inoculants or soil conditioners that release protective volatiles.
4. Field testing is the next step. While the laboratory results are exciting, the team now needs to confirm that the same protective effect happens in real soils, under changing weather and cropping conditions. They also need to ensure that the gases are safe for plants and do not affect beneficial species.

A fit with regenerative thinking

This kind of microbial defence is a good example of how regenerative farming and science can align. Instead of trying to kill every pathogen directly, the idea is to create resilient soils where natural biology does most of the work. Just as nitrogen-fixing bacteria reduce fertiliser needs, defensive fungi could one day reduce fungicide reliance.

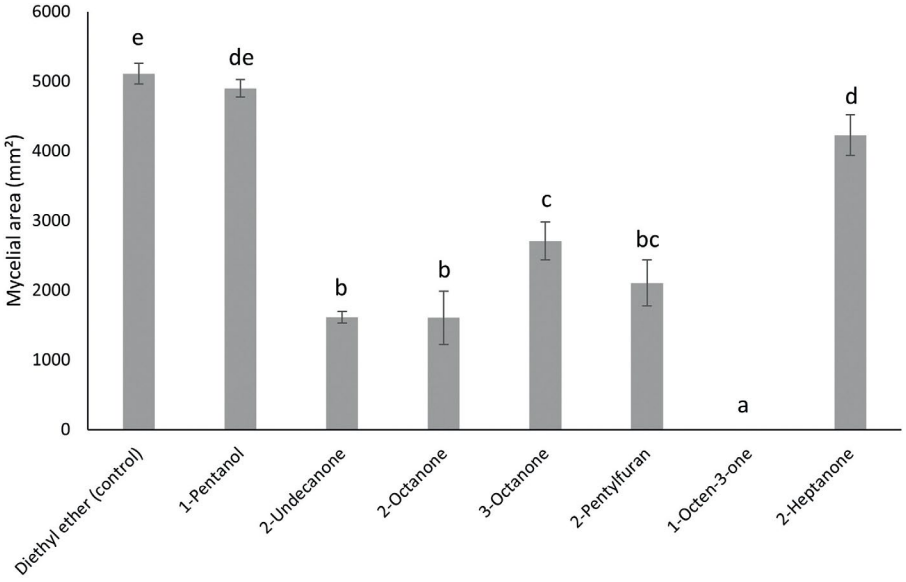
For oilseed rape growers struggling with light leaf spot and Sclerotinia, or cereal growers facing take-all in continuous wheat, that is an appealing thought. Fewer chemical applications, lower costs and healthier soil biology all fit within the broader goals of regenerative systems.

Still questions to answer

There are still challenges. Volatile compounds are, by definition, short-lived. Their effectiveness may depend on soil structure, temperature and moisture levels. Researchers also need to find out whether the same compounds can persist long enough to provide protection at field scale.

Another important point is selectivity. The compounds that kill Sclerotinia in the lab might also affect plant roots or other beneficial fungi if concentrations are too high. That is why glasshouse and small-plot field trials are planned before any potential products are developed.

But the concept — using microbial communication as a natural pest control system — is gaining momentum. It adds another layer to how we think about soil management, moving from simple "inputs and outputs" towards managing a living, communicating ecosystem.



Antifungal activities of selected VOCs on the growth of Sclerotinia sclerotiorum. S. sclerotiorum was incubated with selected VOCs at 45.5 µM doses and the inhibition rates were calculated relative to control plates (exposed to diethyl ether alone) after 3 days. Bars represent the mean mycelial area of S. sclerotiorum upon exposure to each VOC (± SD) (n = 3). Different letters indicate significant differences between treatments according to Tukey's multiple comparisons test (p < 0.05). Y axis represents mycelial area (mm2).

A promising future beneath our boots

Imagine a future where a seed dressing doesn't just coat the seed with a fungicide but instead encourages beneficial fungi to colonise the root zone and release protective volatiles when disease pressure builds. Or where compost and digestate inoculants are designed not just to feed microbes but to activate their natural chemical defences.

That may sound futuristic, but this research shows that the building blocks already exist. As Dr Gareth Thomas from Rothamsted explains:

"We're learning that microbes in the soil aren't silent passengers. They are constantly talking to each other, and those conversations can make the difference between a healthy crop and a disease outbreak. Our goal is to learn how to work with that chemistry rather than against it."

For farmers, that is an encouraging message. The answer to managing some of our toughest crop diseases might not come from the next synthetic spray, but from understanding and supporting the life already in the soil.

Key points for farmers

- Sclerotinia sclerotiorum infects more than 800 crops and can survive in soil for over 8 years.
- The beneficial soil fungus Trichoderma hamatum GD12 releases natural antifungal gases when it detects Sclerotinia.
- The key compound, 1-octen-3-one, completely halted the pathogen in lab tests and also suppressed light leaf spot, grey mould and take-all.
- Researchers aim to test these compounds in soil and field conditions to see if they can reduce fungicide use in practical farming systems.
- Building and supporting soil biology through regenerative practices could help unlock these natural defences on farm.

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FARMER FOCUS CLIVE BAILYE

From the Field to Westminster: A Year That Changed Farming

It's been about 18 months since my last contribution to Direct Driller, and during that time, a lot has changed — both on my farm and in British agriculture. I've always tried to be open and honest in these pieces. They're not polished PR, not a government briefing and not a sales pitch for some new magic bullet. They're simply the reflections of a working farmer who has spent most of his life in fields rather than meeting rooms.

This time, though, it's been harder to put pen to paper. Not because there hasn't been anything to write about, but because the past year and a half has felt like a whirlwind; politically, personally and practically. It's been a year of frustration, unexpected activism and stubborn resilience. And, if I'm honest, it's been one of the most pivotal periods of my farming career.

The turning point was late October 2024, when Rachel Reeves delivered her Budget. For most people outside the industry, it was just another political speech. But for family farms like mine, it was a seismic moment. With a few lines of policy, she fundamentally altered the landscape for succession, inheritance and the security of multi-generational businesses that have shaped the British countryside for centuries.

Agricultural Property Relief (APR) and Business Property Relief (BPR) are not obscure technicalities to us; they are the backbone of how farms survive from one generation to the next. Those reliefs aren't "tax loopholes" as some columnists like to sneer. They're the recognition that farms are not just businesses but working, living assets — often asset-rich but cash-poor — that need multigenerational stability over decades, not just this year's balance sheet.

When Reeves announced those changes, it felt like the rug had been pulled from under us. Years of careful planning; not just spreadsheets, but conversations with accountants, lawyers and most importantly, my own family, suddenly looked fragile. What had felt like a steady, if challenging, path into the future now had a massive political faultline running through the middle of it.

I've never set out to be a campaigner; I'm a farmer. I'm at my best in a tractor cab or a shed full of machinery, not waving a placard or giving media interviews. But when those announcements landed, something inside me shifted. It wasn't just about our own family business, it was about what this meant for countless others across the country who quietly keep the nation fed and its landscape managed.

And so, almost without intending to, I found myself helping to organise a national protest. A few of us, farmers like Oliver Harrison, Andrew Ward, Martin Williams and James Mills, started talking and then planning on forums and in WhatsApp groups. What began as a loose conversation turned into one of the largest farmer-led demonstrations in a generation.

On 19 November 2024, we stood outside Downing Street with tens of thousands of others. Farmers, families, contractors, young people, old hands, all with one thing in common: they'd had enough of being ignored. For years, the sector has been used as a political pawn, talked about in manifestos and campaigns but rarely listened to. That day, Westminster had to listen.

I spoke to journalists who had never set foot on a farm in their lives. I gave interviews, sometimes from the cab of a tractor, sometimes on a freezing London street or a brightly lit TV studio. I wasn't speaking for myself alone, I was trying to articulate what thousands were feeling: that this policy wasn't just a tax tweak, it was a direct threat to the fabric of farming families up and down the country.

While all this was going on, the farm didn't stop. Crops still needed planting, spraying, harvesting. The

rain, or lack of it, didn't care what was being debated in Westminster.

If I look back over the last 18 months on the farm, the word that sums it up best is "difficult". We had to put a lot of planned investment on hold. When there's that level of political uncertainty hanging over your head, it's not the time to go signing off big machinery purchases or breaking ground on new infrastructure. Everything became about resilience, efficiency and buying ourselves breathing space. The knock-on effects of this are becoming clear, with several machinery dealerships seemingly the first victims of Rachel Reeves plans for "growth".

However, that didn't mean standing still. In fact, some of our best bits of innovation happened because we had to rethink things. We leaned harder into the SFI (Sustainable Farming Incentive) options, adding direct drilling and precision farming options to our existing agreement, just days before the scheme was closed in yet another political blow to our industry. We pushed further down the road of herbicide reduction, running trials with the Horsch hybrid system, tined weeding, inter-row hoeing and crimping cover crops. We trialled different rotations, including swapping out some winter barley for spelt, aimed to see if we could potentially open doors to higher value niche markets versus trying to compete on global commodity markets with countries that have far lower production costs and more farmer-friendly politicians.

Like many farms, we also battled through some brutal weather swings. Drought in our part of England was

reminiscent of 1976. Yields were under pressure, prices were at a 20-year low and inflation pushed costs higher, meaning margins were tighter than ever. But that's where regenerative principles and no-till systems came into their own. When the weather is extreme, having resilient soil structure is not some theoretical buzzword; it's the difference between getting a crop in or staring at dust, and that lower fixed-cost structure I've been laser-focused on for 18 years now becomes the difference between profit and loss.

I've spoken before about the practical side of farming, but what hit me hardest this time wasn't the work itself, it was the mental load. Running a farm is challenging enough when you know the rules of the game. When those rules are ripped up overnight, it adds a weight that's hard to explain to anyone who hasn't felt it.

This isn't just about balance sheets and business plans; this is about identity, family and legacy. My two boys are growing up in this world. Every farmer who has the next generation in mind knows that this isn't just our job, it's something we hope to pass on. When political decisions threaten that, it gnaws at you every single day.

There were weeks when I spent more time on the phone with journalists, MPs and campaigners than I did running my business. That's not what I signed up for when I started farming. But I felt, like so many others did, that if we didn't step up now, we'd regret it later.

The scale of the protest and the outrage around the policy shift did something no one quite expected: it put farming back in the media spotlight. Not just in farming papers, but on national TV and radio. Suddenly, journalists were interested. Suddenly, farming wasn't just a quaint rural backdrop to a lifestyle segment; it was a serious national issue. We may not have got the catastrophic shift to APR and BPR changed — yet — but that increased public awareness of what's behind those supermarket shelves is both welcome and long overdue. If anyone feels their train ticket to London last November was a waste of money, they need to consider the value of that public support and its power to potentially change the future of UK agriculture. Media and political doors opened after the 19th of November and we are working hard to make the most of the many opportunities that may bring.

I'll be honest, it was uncomfortable at times. Farmers are doers by nature, not talkers. Most of us don't crave the limelight. But the silver lining was clear: people started to listen, and the public response was overwhelming. We saw support on a scale I haven't experienced before. That matters, because political change often follows cultural change. If the public backs farmers, politicians eventually have to.

Where does that leave us now? Not in some fairytale where everything's been fixed. Reeves hasn't reversed course. At least, not yet. But the pressure is on, and more importantly, farming has found its voice again.

On the farm, we're pressing ahead with what we can control: better soil, smarter rotations, less waste and trying to stay financially lean without giving up on ambition. We're planning, cautiously but firmly, for the future.

We've also learnt something important: resilience isn't just about the soil. It's about the people too. The way farmers rallied together last winter was something special. It reminded me of what this industry can do when it stops grumbling in isolation and starts speaking with one voice.

I'm also more convinced than ever that regenerative approaches aren't a fad. They're part of how we weather these storms — political, financial and environmental. This past year hasn't been a distraction from farming; it's shown me just how intertwined farming and politics have become. Whether we like it or not, we can't ignore Westminster. But nor should Westminster ignore us.

So yes, it's been 18 months since my last article and, in that time, I've become an accidental campaigner, a reluctant media spokesperson, and somehow, an even prouder farmer.

This has been a year of uncertainty, but also a year of finding our collective voice. If there's a positive in all this, it's that farmers are no longer sitting quietly at the back of the room. We're at the table now. And once you've sat at the table, you don't go back to the corner.

For me, this has been a reminder that what we do in the fields every day is inseparable from the decisions made in Parliament. I'd rather be out drilling wheat than talking tax policy, but if that's what it takes to secure the future of this farm, and others like it, then so be it.

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WHEN **FARMING** MEETS **GARDENING:** HOW REGENERATION TOOK ROOT IN MY GARDEN

By Donna Harvey-Bailye

For as long as I can remember, I've been happiest with soil under my nails and a design plan in my head. Gardening has always been my creative outlet; a place where I can paint with plants, sculpt with texture and choreograph the seasons. My large farmhouse garden in Staffordshire has long been both my canvas and my sanctuary, where I've hosted open garden days and shared the joy of colour, form and planting design with other gardeners many times.

But recently, my garden, and I, have undergone something of a transformation. Visitors still come to chat about structure, shade and the art of planting combinations, but now they're just as likely to find me talking animatedly about soil health, compost layering, worms and microbial life. The shift has been subtle but profound, from simply designing gardens on the land to working with the land.

And for that, I have Farming to thank.

Being married to a regenerative agriculture farmer has its perks, and its lessons. Over the past two decades, I've watched him restore health to tired soils, bring back biodiversity to the farm and turn traditional farming wisdom on its head. Instead of fighting nature, he works alongside it, protecting the soil with cover crops, building fertility naturally and encouraging a thriving ecosystem both above and below the ground.

Somewhere between his talk of root structures and soil microbes, something clicked. I realised that what he was doing on hundreds of acres, I could try on a smaller, leafier scale, right here in my own back garden. That's how my no-dig journey began.

And here's something I've come to believe quite strongly: farmers have a huge amount of expertise to offer horticulture. They understand soil health, water management, nutrient cycles and the balance of ecosystems in a way that gardeners can learn so much from. The regenerative movement in farming isn't just transforming agriculture, it's offering a blueprint for a more sustainable, life-giving kind of gardening, too.

The principle of no-dig gardening is

disarmingly simple: stop disturbing the soil. Instead of turning it over each season, you build on top, layering compost, mulch and organic matter, allowing the worms and microorganisms to do the work for you.

The science behind it is fascinating. Beneath our feet lies a vast underground community; bacteria, fungi and other organisms forming delicate networks that help plants access nutrients, retain water and resist disease. Every time we dig, we disrupt those networks. When we leave them intact, soil life flourishes, and so, too, does everything that grows above it.

The results have been nothing short of extraordinary. My vegetables are thriving, my flower borders have more vigour and the garden seems to hum with new energy.

The Beauty of Imperfection

Of course, the no-dig approach requires a little change in mindset. I used to pride myself on immaculate borders and well-defined edges; the kind of garden that looks like it's had its hair done before company arrives. Now, I find beauty in the slightly wilder look: a bit of mulch here, a fallen leaf there, and yes, even a fine selection of weeds.

In fact, I've learned to see weeds differently. The odd nettle or dandelion isn't a failure of tidiness but a sign of balance. They support pollinators, signal healthy soil and contribute to the garden's ecological diversity. When visitors at my open garden days point out a stray weed I might once have pulled out in embarrassment, I now smile and say, "That one's here on purpose."

And nature has rewarded me for loosening my grip. The increase in wildlife has been astonishing. Birds, bees, butterflies and beetles have returned in abundance, drawn by this symbiotic system where everything supports everything else. The garden has become not just a designed space, but a living, breathing ecosystem.

Growing with the Garden

No-dig gardening has changed more than just my soil; it's changed the way I think. It's less about imposing order and more about fostering relationships: between plants and soil, between gardener and nature. I used to garden for the flowers; now I garden for the fungi. (Don't tell the roses.)

Donna Harvey-Bailye

The regenerative movement that began in the paddock has crept into my heart, and my compost heap. What started as an experiment has become a philosophy. Every time I spread a new layer of mulch or spot a happy earthworm wriggling by, I feel a little more connected to the land, and to the lessons it's teaching me.

So yes, I've caught the bug, and now I can happily proclaim that I am a regenerative horticulture gardener married to a regenerative agriculture farmer. I am proud of that.

ALL IN ONE. Integrating on-farm digital data with artificial intelligence and new laboratory tests lets growers stay ahead of challenges, reduce inputs and bin optimum yields, which will benefit growers and the agronomists who are working with them, experts say.
Source: Microgen

HOW **SOIL TESTING** IS EVOLVING INTO '**PREDICTIVE AGRONOMY**'

By Dan Crummett and originally published in No-Till farmer USA

Takeaways

- Look deeper than N, P and K and micros for better ROI on inputs.
- Treat the soil as a living system and not merely an anchor for plants.
- Invest in integrated "complete" soil analysis with labs capable of timely, precision testing.

Big changes are under way in the soil testing industry as digital technology demonstrates the importance of viewing farm fields as a living system — requiring more than a yearly grocery list of plant nutrients.

No-tillers and strip-tillers take soil biology seriously and many of them are looking beyond traditional soil tests to boost soil health while reducing input expenses. Typically, that leads to investing in data-driven soil analysis, which includes an integrated look at chemical, biological and physical properties of soil — not just plant nutrient availability.

While still important, the days of traditional soil sampling for nitrogen (N), phosphorus (P), potassium (K) sulfur (S) and micronutrients as a single agronomic best management practice are rapidly fading, experts say. What's taking its place, however, promises far better precision nutrient management and timely, actionable in-season decision-making information.

Testing for Function

Colorado State Univ. soil health researcher Lexi Firth is well acquainted with the new face of soil testing in her work with soil carbon and water relationships. She coins a kitchen metaphor to explain the difference in traditional soil testing and what she calls "testing for function."

"Traditional soil tests are like checking your pantry for how many pounds of flour you may have, but not whether the oven is on or who's going to make the dinner tonight," Firth observes. "Testing for function goes beyond producing an inventory of ingredients and seeks to answer how those ingredients will be blended, by whom and how long cooking will take. It can also give you clues of what to expect.

"The tests we've used for years tell us how much phosphorus, potassium or nitrogen was in the soil when the sample was pulled. But they

don't answer the question of, 'Is the system actually working?' That would involve determining: Is the soil cycling nutrients efficiently? Is it holding water? Is biology alive and actively working to break down organic matter?

"Testing for function by examining chemical, biological and physical soil properties provides an integrated look at soil as a system and how well it's performing," she adds.

Learning to Ask the Right Questions

In visiting with Mike Evans, Lexi Firth, Clint Frese and Kris Kinnaird, No-Till Farmer compiled the following list of curated questions and answers for growers to ask if they are interested in taking the next step into predictive agronomy or "testing for function."

1. What problems am I seeking to solve? Problems ranging from compaction, water holding capacity/infiltration, yield barriers, input costs, disease and pest control all have likely roots in soil health relationships. Seek advice from others using high-tech sampling for suggested resources.
2. What does it cost? Buying in to high-tech integrated soil testing likely carries a higher cost than traditional soil tests, which mainly identify nutrient content. And, like other investments the cost-benefit ratio and timely ROI figures will be specific to individual operations. For a large grower who can save $20-$30 per acre on fertilizer, the ROI for advanced testing could be easily amortized. Frese says his Illinois operation was spending $1.40 per acre overall for traditional soil testing, but with the integrated approach he's spending just over $2.
3. What lab do I use? Firth recommends laboratories certified by the Soil Science Society of America's North American Proficiency Testing (NAPT) program.

When testing for function, Firth looks at soil chemistry (available through traditional soil sampling) to know what raw materials are available. She also looks at biological indicators, which in terms of function, will tell her how well the soil is cycling nutrients.

"A measure of microbial respiration shows how active your biology is, and a strong burst of respiration indicates how busy your microbes are breaking down nutrients," she explains.

She also looks for physical indicators (soil structure), which tell how well the soil is handling oxygen and water movement through pore spaces to gauge water infiltration, moisture retention and aggregate stability.

"This information shows whether soil pores are open, and water and oxygen can circulate," Firth explains. "A soil that seals over quickly and doesn't hold structure well is going to struggle to support root growth. It's also going to struggle to support an active biological community, which again is connected to nutrient cycling.

"All these things combined give me clues about management decisions down the line and what might be helpful to optimize crop development," she adds, noting the integrated soil sampling/analysis approach is part of a growing move to "predictive agronomy."

Predictive Agronomy

Firth says traditional soil testing provides a "still snapshot" of plant nutrients in the soil, whereas predictive agronomy can provide a "time-lapse video" of likely in-season growing conditions.

It does this using digital data from many real-time soil and weather sensors, historic chemical samples, soil inventory maps, yield maps, satellite imagery, cropping history and historic rainfall and temperature data — all examined with the help of artificial intelligence (AI).

"AI is useful as a tool to find patterns in huge piles of data and then using those patterns to make predictions," Firth explains.

As an example, an AI model for predictive agronomy would be created by feeding millions of data points from the above-mentioned sources into the system so it can learn which combinations of variables leads to high nutrient availability and which leads to deficiencies.

"Once we train an AI model it can use the data and make a prediction about what's likely to happen next," she says.

"For no-till farmers this can be a very powerful tool. In a conventional tillage system nutrients are incorporated and mixed and the results are quite predictable," she explains." In no-till systems, nutrients tend to be more stratified, and their release depends heavily on residue breakdown or soil moisture microbial activity.

"By knowing rainfall patterns and soil moisture conditions, predictive agronomy can help a no-tiller anticipate nutrient flushes or shortages rather than waiting to see visible signs of crop stress."

A Grower's Perspective

Using emerging technology for ever-more-precise soil and water testing, Jon Abrahamson discovered his irrigation groundwater was working against him on his 1,900 acres of watered no-till corn and soybeans.

Abrahamson's 25-year history of 100% no-till near Axtell in south-central Nebraska includes adoption of both variable rate (VR) planting and dry fertilizer applications with calcium, lime and sulfur products, along with in-furrow phosphorus, portions of his expected nitrogen needs, and micronutrients applied 2X2 on the planter. Generally, the remainder of his nutrient program is applied through sprinkler fertigation.

"We'd been using many of the proven tools for optimum yields and precision nutrient management and were still raising good crops, but several years ago it just seemed like we were hitting a plateau," Abrahamson recalls. That's

HEALTHY AND PRODUCTIVE. Rapid advancements in technology allows farmers to now test for the factors that will help provide growers a healthy soil that can defend itself from pathogens and produces healthier plants resilient to weather and disease stresses, says Clint Frese, a founder of Calibrate Agronomy. Source: John Dobberstein

when he began working with other high-intensity farmers in the area looking for clues to better yields and lower inputs.

This included Jared Cook from Idaho who was familiar with poor irrigation water quality in his sugarbeet and potato production; Mike Evans in Iowa, and Clint Frese, an Illinois strip-tiller and no-tiller. All were interested in making their operations more productive by leveraging emerging technology to reduce inputs.

"They introduced me to new testing methods and laboratory services that almost immediately helped me reduce nitrogen inputs for my crops," Abrahamson says.

Evans, Frese and Cook eventually formed Calibrated Agronomy, an Iowa-based data-driven, farmer-focused company using new technologies that increasingly offer predictive agronomy benefits through various laboratories and new in-field sensor technology.

Working with Cook, Abrahamson employed a rapid soil test to compare soil performance with his irrigation vs. soil and water known to have no counteractive qualities. He found his untreated irrigation water was tying up P and other nutrients.

When P levels aren't at capacity, crop plants suffer from the deficiency and other nutrients also become less available.

"Once I began treating my irrigation water, the available nitrogen levels climbed sufficiently to allow me to apply less N without affecting yields," Abrahamson explains. "Using untreated water we were getting single-digit P levels under the irrigation system, but on dryland areas and un-watered corners near our pivots, the levels were in the 20-40 ppm range. It just made sense to me to check the water, and the advanced testing identified the problem."

Beyond the rapid soil test, over the next several years Abrahamson adopted additional precision testing and in-field soil sensors that are now saving him money.

The year after he solved the water issues, he started using SoilTech Wireless's Beacon, a tool Cook is using in his work with potatoes, Abrahamson says.

"It's a loaf-of-bread-sized unit we buried in our fields that measures soil mineralization in real time to let you know when you're getting a flush of microbial activity and increasing nitrogen levels."

Abrahamson is also using plant sap analysis as part of his adoption of high-tech technology aimed at optimizing plant and soil relationships.

Sap analysis measures the active liquids in plant vascular tissues (xylem and phloem) and provides a nearly real-time assessment of the nutrients available at the time of sample. In Abrahamson's sap tests, the fluids are collected with linear pressure to preserve the leaf and cell structure and give a picture of what is active in the plant at sampling.

"Standard soil testing labs are not going to disappear, but their role will likely change..."

"The weekly sap test has helped me monitor the dry calcium we apply," Abrahamson says. "We're able to quantify it in nearly real-time and can quickly be reactive within 2-3 weeks instead of waiting for plant stress to become visible.

"To me traditional soil tests are old technology. With the rapid soil test and weekly sap tests, it's like looking out your windshield, while a tissue

test is like looking in the rear-view mirror, and a standard soil test is like looking at your fuel gauge."

Future Face of Soil Testing

Abrahamson likely won't be returning to a traditional soil sample and a paper nutrient RX, but Firth, Frese and Evans say traditional visits to the field to pull core samples and send them for analysis aren't going away. They may just become less frequent or collected by robots.

"Standard soil testing labs are not going to disappear, but their role will likely change," Firth says. "The physical tests we do now are going to be used more for ground-truthing and calibration checks for the emerging AI-based systems, but the depth of analysis you'll do with these legacy tests will certainly be scaled back in the next 10 years.

"I envision integrated soil testing to become a 'dashboard' of dynamic sensor-based data on which growers can monitor real-time soil chemistry and biological activity, compared with laboratory spectral analysis of field-collected soil samples — providing a 'living system' that you monitor throughout the season rather than generating a chemical analysis report on a piece of paper."

Firth explains digital systems are only as good as the data they're fed, however, and field soil samples likely will remain important to provide baseline data as well as on-going information to teach and calibrate virtual and precision systems.

Kris Kinnaird, director of farm and retail growth for FarmersEdge, in Canada, agrees, noting his firm developed an AI-assisted Virtual Soil Testing (VST) product and for about 8 years has been fielding it on millions of acres. Still, he says traditional soil sampling chores are at the heart of baseline operations — even for growers who depend upon advanced modeling VST to "fill in the gaps" on some fields while they actively sample others.

"Traditional soil tests are like checking your pantry for how many pounds of flour you may have, but not whether the oven is on, or who's going to make the dinner tonight…"

FarmersEdge has customers in Canada, the U.S. and Brazil using the VST product to take massive amounts of information and turn it into insight that drives a decision.

"We apply different growth stage disease and pest models in our platform, along with satellite imagery, weather data and other remote sensing information and use that with soil data we've collected to give growers highly-correlated data to yield prediction.

"As growers use it, they become more comfortable relying on it even when the acres on which it is used were not sampled for the immediate season," he say. "Likely they were able to spend their soil-collecting and lab expense budgets on other acres of their operation to either scale up acres farmed, or to hold the line on soil analysis costs."

Testing for Soil Health

Kinnaird, himself a southwestern Manitoba small-grains producer, says the company has farmer and agronomist clients who've seen return on investment upwards of $30 per acre with VST and complete soil analysis.

Firth says with rapid adoption of complete analysis and AI-assisted virtual systems, crop consultants will remain important in the future as soil-testing evolves. Kinnaird, Frese and Evans agree, saying the new technologies are rapidly become part of the interaction between crop advisors and growers, with advisors explaining how the avalanche of data can be best used.

Evans says the launch of Calibrated Agronomy in 2024 was based on belief growers can benefit from the newer technologies to be more predictive and capable of realizing, with some certainty, what may occur in fields before problems become obvious.

Frese notes the principal members in the new company have experience in reduced tillage, reduced fertility, no-till, strip-till, cover crops and the different management of each of those practices as well as work with biological inputs.

"We've pulled every soil test for a biological, nutrient or chemistry perspective that exists to enter the predictive agronomy business," Frese says. "Technology now allows us to test for the factors that will help provide growers a healthy soil that can defend itself from pathogens and produces healthier plants resilient to weather and disease stresses.

"Only 8-10 years ago such analysis was financially out of reach for growers who might want to determine different soil-borne microbes in their fields. Today, however, it's cost-effective we can identify the genetics and size of various populations of each in a biological profile.

Frese says the biological profile should be of particular interest to no-tillers — particularly those who think because they aren't disturbing the soil they are building their ecosystem and improving soil health with annual cover crops.

"We see many no-tillers incorporating cereal rye as a cover crop which is very likely helping them improve their soil aggregate stability and water-holding capacity," he notes. "We're finding however, without a diverse crop rotation or biological inputs we can never outcompete some of the pathogens that are building up in those soils. They really need to know the basic pathogen profile of their fields.

UNLOCKING THE GENES BEHIND **WHEAT GROWTH** AND **GRAIN SIZE**

Adapted for Direct Driller readers based on a paper by Dr Stephen Pearce from Rothamsted Research and the Czech Institute of Experimental Botany

If there's one crop that keeps British farming grounded, it's wheat. From milling and feed markets to exports, it sits at the centre of most arable rotations. Yet after decades of breeding and agronomy improvements, yield progress seems to have slowed, and the question facing the industry is clear: where will the next gains come from?

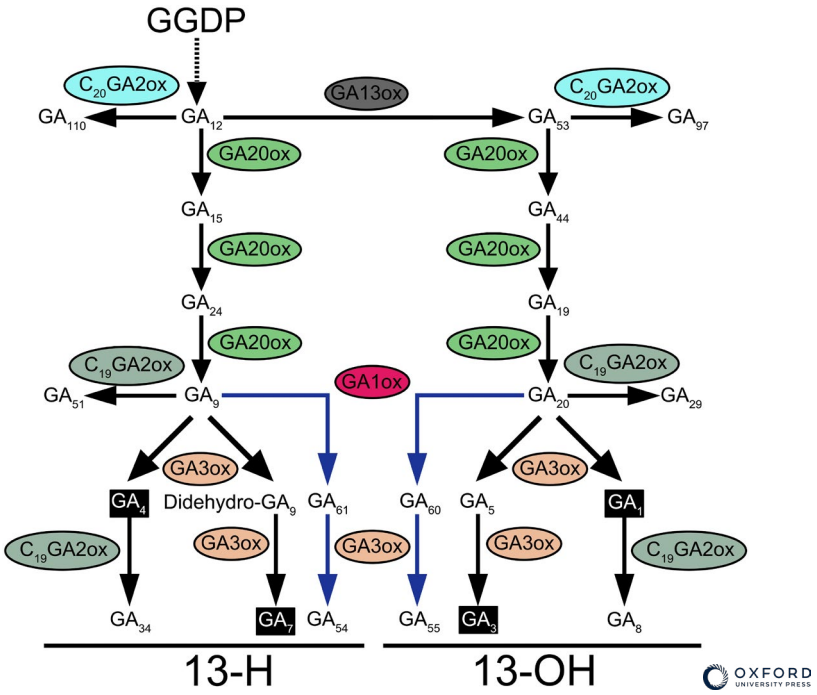
A team of scientists at Rothamsted Research believe part of the answer lies deep within the plant's own biology. Their latest findings shed new light on how wheat controls its height and grain development — and how small changes in key genes could help breeders fine-tune yield and plant structure in the years ahead.

The growth hormone story

The work, published in The Journal of Experimental Botany (QR code for the full paper at the end), focuses on a set of natural plant hormones called **gibberellins** (GAs). These hormones act like growth regulators inside the plant, influencing everything from stem elongation to seed development. If the name sounds familiar, it's because gibberellins are the same hormones that synthetic plant growth regulators (PGRs) mimic or influence.

In wheat, gibberellins were central to the Green Revolution of the 1960s, when short-strawed, semi-dwarf varieties dramatically increased yields worldwide. Those varieties contained mutations that reduced GA production, preventing lodging while allowing more of the plant's energy to go into the grain. But even today, we still don't fully understand how gibberellins are distributed and balanced within the plant.

The new study unpicks this puzzle by looking closely at the genes that control GA production, and how they vary across different wheat tissues.



Late stages of the gibberellin (GA) biosynthesis pathway in higher plants showing the activity and substrates of 2-ODD enzymes. Substrates GA54, GA55, GA60 and GA61 are detected only in wheat grain tissues. The reactions forming these substrates are highlighted in blue.

Seven genes, one big influence

Bread wheat (Triticum aestivum) is genetically complex, with three sets of chromosomes inherited from its wild ancestors. That means most genes come in multiple copies. In this case, the researchers identified seven versions of a gene family known as **GA3OX** — each involved in converting gibberellin precursors into their active form.

By switching off individual members of this gene family one at a time, the team were able to see which versions affected plant height and which influenced grain size. What they found shows just how precisely the plant controls its own growth.

When the **GA3OX2** genes were knocked out, the plants were severely stunted and produced almost no grain. They simply couldn't make enough active gibberellin to support normal development. On the other hand, when the scientists targeted the **GA3OX3** or **GA1OX1** genes, the effects were much more specific — focused on the developing grains rather than the whole plant.

In simple terms, **GA3OX2** acts as the "master switch" for overall growth, while **GA3OX3** and **GA1OX1** fine-tune the balance of hormones in the ear, determining how large or small each grain becomes.

Hormones on the move

One of the most interesting discoveries from this research is that gibberellins appear to move around the plant more freely than previously thought. Changes to the genes active in grains also affected stem height, suggesting that hormones or their precursors are transported between tissues.

That finding could have big implications for how breeders think about yield and structure. In modern wheat breeding, shorter plants are desirable because they resist lodging and can carry more grain. But making plants too short can limit their ability to compete for light or support big grains. Understanding how hormone levels in the spike influence the rest of the plant could help breeders strike a better balance between height and yield.

As Dr Stephen Pearce from Rothamsted Research explained:

"Decades of work on the gibberellin pathway led us to target these genes, which could now help develop wheat with bigger grains. The challenge has always been balancing plant height and yield potential, and this work gives us new tools to do that more precisely."

Natural variants already in play

When the team analysed a panel of modern wheat varieties, they discovered that many breeders had already, perhaps unknowingly, selected for natural versions of these genes that favour larger grain size. In other words, the process of selection in breeding programmes has been nudging these hormone pathways in the right direction for years.

However, now that these specific genes have been identified, breeders can target them much more efficiently using genetic markers. This opens the door to designing wheat varieties that combine the best of both worlds — strong straw and bigger, heavier grains — without the trade-offs that have limited progress in the past.

What this means for UK growers

For British arable farmers, this type of science might sound a long way from the drill, but it's exactly this kind of background work that drives future yield improvements. The Rothamsted study helps explain why some modern varieties combine high grain weights with robust structure, while others struggle to translate biomass into yield.

Better understanding of gibberellin pathways could lead to:

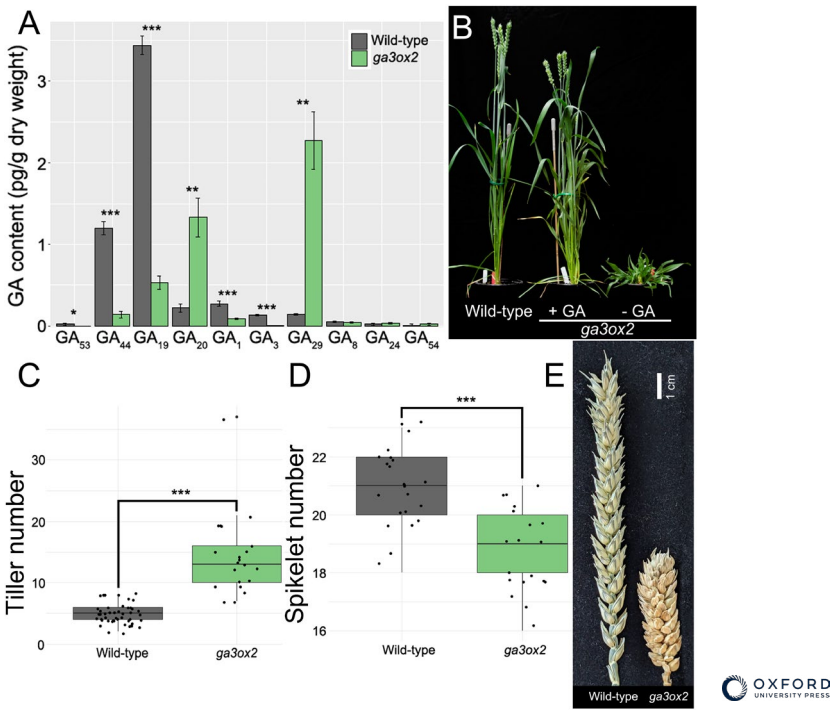
1. **More consistent yield potential** across seasons by maintaining optimal grain filling even in stress conditions.
2. **Improved lodging resistance** without relying solely on chemical PGRs.
3. **Varieties with built-in hormone balance**, reducing the need for growth regulation inputs.

These outcomes align well with the shift toward more sustainable, input-efficient systems that many UK growers are pursuing through regenerative practices and integrated crop management.

A genetic roadmap for breeders

For plant breeders, the paper provides something extremely valuable: a clear genetic map of where to look for useful variation. The seven GA3OX genes each act in slightly different tissues and at different stages of development. By selecting combinations that give the right gibberellin balance, breeders could produce varieties that reach an ideal height under UK conditions while still delivering strong grain size and weight.

This could also help make breeding for resilience faster. Rather than screening thousands of plants in the field, breeders can now use molecular markers linked to these GA genes to predict how a line will behave. That means shorter breeding cycles and a better chance of combining complex traits like height, tiller number, and grain mass.



*Functional characterization of the ga3ox2 mutant in wheat. (A) Quantification of gibberellin (GA) concentrations in wild-type and ga3ox2 seedling tissues. (B) Phenotype of representative wild-type and ga3ox2 plants when wild-type plants reached anthesis. The plant labelled '+ GA' was sprayed twice weekly with 10 µM GA3. (C) Tiller number in wild-type and ga3ox2 mutants (n=20). (D) Spikelet number in wild-type and ga3ox2 mutants (n=20). (E) Representative spikes of wild-type and ga3ox2 mutants taken post-anthesis. Bar=1 cm. Asterisks indicate significant differences between 'Cadenza' and ga3ox2 genotypes (*P<0.05, **P<0.01, ***P<0.001; two-tailed Student's t-test).*

The long path to applied genetics

The Rothamsted group's discovery builds on decades of work into gibberellin biology. The first dwarfing genes used in the Green Revolution (Rht1 and Rht2) were found to reduce gibberellin response, effectively making the plant insensitive to the growth hormone. The new research takes that understanding one step further, showing how wheat actually manufactures the hormone in the first place.

It's a reminder that yield progress often depends on small, carefully tuned changes rather than single "silver bullet" genes. As Dr Pearce and his co-authors note, GA3OX2 is essential for basic growth, so knocking it back too far would cripple the plant. But small adjustments to GA3OX3 or GA1OX1 expression could subtly increase grain size without upsetting the rest of the system.

The bigger picture — feeding the future

With the global wheat demand predicted to rise by 50% by 2050, incremental genetic gains are going to be crucial. The world's available farmland is not increasing, so yield per hectare must continue to improve. The Rothamsted study provides a roadmap for doing just that — using genetic insight to make each plant a little more efficient in how it uses its own growth regulators.

In the UK, where growers face both yield plateaus and climate uncertainty, understanding hormone balance could also contribute to stability. Plants that regulate their own gibberellins more precisely may cope better with variable moisture or heat stress, reducing the swings in grain size seen in dry or late seasons.

Looking ahead

While the study is still at the research stage, it represents another piece of the puzzle in understanding how wheat growth is controlled. The next steps will likely involve testing these gene variants under real-world growing conditions, to see how they interact with environmental stresses, nitrogen levels, and other agronomic factors.

This is where partnerships between scientists, breeders and farmers become vital. Translating gene-level discoveries into field-ready varieties depends on feedback from the field — how plants behave under tramlines, not just under glasshouse lights.

As with previous Rothamsted breakthroughs, the benefits will filter through over time. The varieties that reach farm trials in the coming decade may owe much of their yield stability or grain weight to the subtle tweaks being identified in this research.

Key takeaways for growers

- Rothamsted scientists identified seven **GA3OX** genes that regulate gibberellin production in wheat.
- The **GA3OX2** genes control overall plant height, while **GA3OX3** and **GA1OX1** influence grain size and weight.
- Gibberellin hormones appear to move between tissues, linking grain development and plant stature.
- Modern varieties already carry natural variants of these genes that breeders have selected for larger grains.
- Understanding and using these pathways could help develop wheat with **higher yields, balanced height, and less need for PGRs**.

DRILL MANUFACTURERS IN FOCUS...

CHALLENGING SEASON HIGHLIGHTS THE NEED TO CONTROL COSTS

Below-average yields and low prices this harvest underline the importance of maximising efficiency across every aspect of crop production, emphasises Jeff Claydon, Suffolk arable farmer and inventor of the Claydon Opti-Till® direct seeding system.

25 August 2025

In the article I wrote last August I mentioned that after an exceedingly difficult season crops on our own and many other farms could best be summarised as 'The Good, the Bad and the Ugly.'

Unfortunately, the challenges continued into 2024/25, which brought variable weather, below-average yields and low cereal prices. On the Claydon farm, despite an optimistic start to the season, yields were 15% to 20% down, disappointing but nowhere near as bad as some have experienced. With feed wheat futures currently languishing at £160 per tonne, well under half the £360 per tonne on offer in May 2022, it has become much more difficult to make a profit.

I know that you probably don't want to hear it, but when things are at their toughest the key is to 'think change'. That was the situation we faced in 2002 when grain prices fell below £60 per tonne, at which it was impossible to make a profit, putting the future of our family farm in question. To survive we had to reduce our cost base, a key part of which was to significantly change how crops were established because conventional methods had become too expensive.

At the time there was nothing on the market which would do what we wanted, so I designed a direct drill which dramatically reduced the amount of time, machinery, fuel and labour required. What subsequently developed into the Claydon Opti-Till® System has been a 'game-changer,' transforming the economic and ecological sustainability of our farm. This simple, practical, fast, efficient, low-cost approach has also brought tremendous improvements in timeliness, soil structure, soil biota, and quality of life.

A cover crop on the Claydon farm emerging strongly after being direct drilled

A cover crop emerging strongly just days after being drilled directly into stubble and chopped straw following spring oats.

After a couple of difficult seasons many businesses will be questioning what changes are needed to ensure that they are agronomically and financially viable going forward. Understandably, many will want to carry on as before, but against the current backdrop facing the farming sector doing nothing is unlikely to be a viable option. Investing in more efficient, more effective ways of working could

help to ensure that you have a sustainable business going forward.

A Challenging Season

On the Claydon farm we made significant changes to our cropping for 2024/25. Growing oilseed rape had become a struggle, primarily due to the increasing damage caused by cabbage stem flea beetle following the ban on neonicotinoids. Lacklustre yields combined with prices which did not warrant the high financial and agronomic risks were other reasons why we decided to stop. Instead, we extended the wheat area to two-thirds, while the remainder went into spring oats, providing a good opportunity to control grassweeds using a combination of chemical and mechanical methods.

Opti-Till® has been used here for the last twenty-three years, so our heavy Hanslope Series clay soils are in excellent condition and very well structured, which stood us in good stead last season. The lack of rain, just 60mm from March until harvest, was a serious issue and yields were 15% to 20% down on our long-term averages. I have just sold 116 tonnes of wheat to make space in our grain store for machinery, but hopefully £160/t will not be the highest achieved in the next few months.

Having heard reports of wheat yields as low as 7t/ha, and beans down to 1t/ha, we are not too disappointed but had hoped for better results this season. Winter wheats were variable, averaging 8t/ha, 2t/ha below our long-term figure, with areas drilled in October yielding 10% more than those which went in during November. Elsoms Bamford was our star performer, so we will be growing the variety again in 2025/26.

Elsoms Lion spring oats averaged 5.8t/ha, ranging from 5.25t/ha to 6t+/ha. The highest yield came from an 18ha block where we took out weeds between the rows with our 6m TerraBlade. Despite initial concerns that this might have caused some damage to the emerging crop it was obviously not the case.

We were fortunate to secure the SFI area we applied for last year, three 85ha blocks, and have received some payments, for which we are grateful given below-par yields this harvest. The companion crop of beans planted under SFI did not feature at harvest, having stalled at GS32 due to the dry weather combined with competition from the wheat and oats.

This healthy crop of maize was direct drilled using the same 6m Claydon Evolution which establishes all the other crops on the farm.

Drilling a cover crop immediately behind the combine, after the Straw Harrow had been used to evenly distribute the chopped straw.

We are always questioning what we do and host numerous trials on the farm. The dry weather meant that last season the trials produced no definitive results, but we will continue and, as for the last 45 years, we will measure the yields and decide whether a process or product is worthwhile on a commercial scale.

Fast Turnaround

Harvest was a somewhat drawn-out and frustrating affair because of the frequent showers. In aggregate, they amounted to less than 13mm over four weeks but crops often took two or three days to dry out enough to allow the combine to roll again. We started the wheat on 15 July and by the end of the month had finished the spring oats, completing the last field of wheat on 9 August.

We turned the farm around in an amazing time this year. During the last two years we have corrected areas of sub-standard drainage with plastic mains and laterals, overlayed with mole drains, so there's no need to do anything this season. Our soils are now in an ideal condition for direct drilling.

In between the showers which halted harvesting our 6m Claydon Evolution drill was hard at work, the combination of its high output and the low seed rate enabling cover crops to be established very quickly using just 8 litres of diesel per hectare.

Drilling immediately behind the combine can be extremely challenging where there is a high volume of chopped material, particularly spring oat straw which can be very 'clingy.' Our 15m Claydon Straw Harrow was used

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Elsoms Bamford Winter wheat was the star performer this harvest and will be grown again this season.

behind the Fendt 724 Vario to distribute chopped straw evenly across the field which improved the situation no end. After a day of dry weather it flowed through the drill with no issues.

This season we are experimenting with three cover crop mixes. It will be interesting to compare the performance of crops which follow the cover crops and those where we just used the Straw Harrow, a fast, efficient, low-cost way to take out weeds and volunteers. We will use it up until the first week of September and then apply glyphosate to take out any remaining volunteers before direct drilling wheat with our 6m Claydon Evolution.

Farming is not a hobby for the Claydon family, purely a commercial enterprise, so we continually embrace change and operate as efficiently as possible. Using Opti-Till® total fuel use across all the operations required to produce cereal crops is 40 to 50 l/ha, a fraction of what it would be with a conventional system. That includes all stubble management operations, drilling, spraying, fertiliser application, inter-row hoeing with the Claydon TerraBlade, harvesting and corn carting. Plus all the savings in time and extra machinery needed, and risks involved with the extra workloads, weather, etc, with conventional tillage

This 15m Claydon Straw Harrow is at the heart of the farm's stubble management approach.

Opti-Till® has also reduced tractor hours by 80 per cent, while wear and tear, servicing costs and depreciation are all significantly lower, leaving more 'margin', which benefits everyone involved. Time saving is another, increasingly important, benefit given that I and my two sons, Oliver and Spencer, also manage the Claydon agricultural machinery manufacturing business. Being so efficient, it allows us to use time more productively and have some left over for more interesting things, be it spending time with children / grandchildren or being able to take time off to go shooting.

To help others, the Claydon team has developed the Claydon 'Think' campaign, which shows how the Opti-Till® System helps to reduce the time and cost of establishment by almost 50%. It also demonstrates how customers improve yields and benefit soil health to deliver healthier, more sustainable, more profitable crops. Details can be found on the Claydon website: c**laydondrill.com/think-change/**

Visit **https://claydondrill.com/our-customers/** to hear from farmers across the UK and further afield who are achieving great results with Opti-Till® on a range of crops on varying soils in all climates. You can also keep up with the latest posts, photographs, and videos from Claydon and its customers through the Claydon Facebook page www.facebook.com/Claydondrill

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