ISSUE 33 | JULY 2025

DIRECT DRILLER

SOILS MAGAZINE

THE FUTURE OF YOUR SOILS

Living mulch adventures

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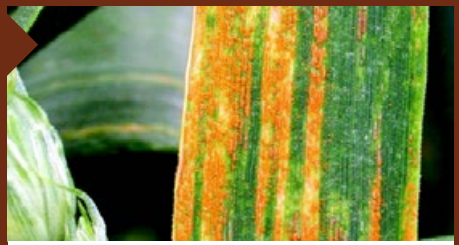


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DIRECT DRILLER MAGAZINE

Issue 33
July 2025

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INTRODUCTION

GROUNDSWELL 2025: A REGENERATIVE FESTIVAL THAT GOES BEYOND THE SOIL

WRITTEN BY CHRIS FELLOWS

I know I'm biased as I was involved in the first Groundswell, but the event proved once again why it is the UK's flagship event for regenerative agriculture. As always, held at Lannock Manor Farm in Hertfordshire, this year's festival brought together farmers, scientists, environmentalists, entrepreneurs, and policymakers for a celebration of soil, food, sustainability and systems thinking. With over 200 sessions and 500 speakers, the event offered something for everyone, from hands-on workshops and field demos to deeply philosophical debates on food systems, land use and the future of farming.

I'm going to admit that I missed the sunrise bird walk and yoga sessions — I would imagine many farmers did — but this event is no longer just about farmers. Those passionate about food and what we eat as a nation were in attendance too.

Diverse Voices, Shared Vision

Groundswell 2025 showcased a global and multi-disciplinary view of conservation agriculture. Farmers from across Europe gathered for a panel titled Unity in Diversity, sharing stories of farmer-led action from Italy to Norway through the European Alliance for Regenerative Agriculture. The message was clear: systemic change is not just possible, it's already happening. High-profile keynote speakers like Prince William, Gabe Brown and Tim Lang stirred the crowd with calls for radical change. Brown's talk, What is All This Talk About Regenerative Agriculture? was a highlight (although some of us have heard a variant of it before), urging a shift away from input dependency and toward holistic land stewardship. Lang, meanwhile, painted a sobering picture of UK's food system vulnerabilities and stressed the need for civil food resilience.

From Soil to Supply Chains

This year, Groundswell expanded its lens beyond the field. Reshaping Supply Chains for a Regenerative Future drew a packed crowd eager to explore new economic models that prioritise fairness, transparency and ecological outcomes. The conversation wasn't just about growing food, it was about how that food moves through the system and how farmers can retain more value.

Discussions on AI in agriculture and nature markets reflected the cutting-edge, even experimental spirit of Groundswell — open to technology, but never at the cost of ecology or autonomy. We are still clearly missing the tools for AI to help farmers with their tasks or learning but it is on the horizon.

Science in the Soil

One of the most striking elements of Groundswell 2025 was its focus on soil health as a living, breathing system. Attendees packed into sessions like Worming Your Way to Better Soil Health and Earthworms and Their Impact, which blended scientific rigour with real-world farm case studies.

Interactive features like Resonating Fields, an immersive installation capturing the bioacoustic sounds of soil life, offered a poetic reminder of the richness beneath our feet. This experimental blending of art and science caught the imagination of many and reinforced the idea that there is a heartbeat of regenerative farming.

Trees and Livestock

Trees and livestock also featured heavily, with practical walk-and-talks on shelterbelts, silvopasture and integrating trees into vegetable production. The session Taking the Golden Hoof One Step Further offered real-world strategies for incorporating livestock into arable systems without compromising ecological integrity.

The Dung Beetle Safari and Regenerative Rotation walk, helped bring theoretical principles to life. Farmers were able to get their hands dirty, ask detailed questions and walk away with practical insights.

Tackling the Big Questions

Panels like Can British Farming Be Saved? provided political context to the agronomic conversations. The mix of Defra officials, campaigners, and pragmatic land managers allowed for an honest airing of frustrations and a mapping of the pathways forward.

It's clear that more policy makers (and royals) attend Groundswell than Cereals. Thus, while they are in the room, it's great to be able to talk to them about the problems that all farmers are facing, not just those embracing conservation agriculture.

A Festival

Perhaps the most unique aspect of Groundswell remains that it runs late into the evening (The nighttime music is certainly the closest I will get to a festival at my age). It's also definitely a celebration of food. There is no doubt that farmers are outnumbered by food processors, supply chain workers, policy makers and investors, but I don't see that as a bad thing. We are all in the same place and we want the same thing: healthier food on our plates and healthier returns for those who grow sustainable food.

The bars and communal eating spaces buzzed with conversation all day and evening, underscoring the community ethos. Over a pint, you could talk to soil scientists, chefs, artists, smallholders and AI engineers.

It's not just about methods; it's about mindsets. It brings together a powerful coalition of the curious, the committed and the courageous. I can only thank everyone who took the time to speak to me about what they are doing and what they want our food system to be. I have, as always, come out of the event knowing a little bit more about many subjects. And that it the main reason I go and will continue to go every year. (That, and the fact they now have whisky stands.)


GROUNDSWELL


AHDB


PASTURE
FIELD

WATER FOCUS
AFFINITY WATER
WHY WE NEED TO TALK ABOUT WATER, AND THE LAND IT RUNS THROUGH

At Groundswell 2025, we set out to change that. As a water supplier working across some of the UK's most environmentally sensitive landscapes, we were proud to join the event to share our work, listen to the farming community, and deepen our commitment to land and water stewardship.

Because water isn't just something that arrives at the tap. It begins in the soil, runs through the land, and infiltrates into aquifers and carries the imprint of everything it touches.

What the land teaches us

One of our key messages at Groundswell was simple but powerful:

"Water quality starts with the land it moves through."

Through the **rainfall simulator demo**, we showed exactly what this means in practice. Visitors could see side-by-side comparisons of how different soil management techniques impact runoff, erosion, and water infiltration. The difference between compacted, depleted soil and living, healthy soil was striking, and undeniable.

Healthy soil doesn't just support better crops, it leads to **healthier water**. It's all connected.

From the ground up

Each year, we test over **200,000 water samples** to ensure safety for both people and ecosystems. But the real work starts upstream, through our work with farmers to optimise inputs, improve soil structure to reduce losses, and support the transition to **regenerative practices** that benefit the whole system. Affinity Water's catchment team have supported the drilling of over 11,000ha of cover and companion crops, a core regenerative farming principle, since 2020. These crops help fix nitrate and prevent leaching and reduce runoff of sediment and pesticides into watercourses.

The rainfall simulator

At Groundswell, we had the chance to speak with dozens of farmers about our catchment schemes, innovation grants, and landscape-scale restoration programmes, including work to protect **globally rare chalk streams** and improve catchment resilience.

Danny Coffey, Catchment Manager at Affinity Water, explains:

"Water quality can reflect what is happening in the landscape. When we invest in better soil management and regenerative farming, we're also investing in cleaner water, resilient rivers, and healthy soils. Groundswell gave us a vital opportunity to show how these pieces fit together and to work with farmers who share that vision and help us treat water, out in the catchment."

Danny Coffey and Ian Robertson

We're not just a water company

Affinity Water is evolving. We're not just managing infrastructure; we're building long-term partnerships with the landowners and farmers who care for their land.

We believe that supporting landowners and farmers is essential to protecting water at its source. That's why we're investing in practical solutions, from funding cover and companion crops, to river restoration schemes, and to demonstrating what works through tools like our rainfall simulator.

We are here not just as a water supplier, but as a **partner in resilience**, nature recovery, and sustainable food production.

Looking ahead

Groundswell was a powerful reminder of the innovation and passion driving change in British agriculture. And it reinforced why water needs to be a bigger part of the conversation.

As climate pressures grow and water becomes an increasingly precious resource, we'll need to work together more than ever, across sectors, landscapes, and disciplines.


The Affinity Water Team

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FEATURED FARMER
FREDERIK LARSEN

Writing this article (while the season is coming to a close in the midst of a 30C heatwave) is the perfect opportunity to reflect on yet another exciting year of arable farming. I'm usually idealistic on which directions to take my farm and arable clients, always striving towards ambitious goals. However, for each new season of arable cropping I experience, I seem to get more settled with the philosophy that farming is a journey towards an always-evolving target. It's better to get used to the fact that no perfect season exists, no perfect crop can ever be harvested and there's no perfect cropping system. Instead, it's one big mess of trade-offs between the plan and reality. Then repeat.

Yet the 2025 season is one to remember. Our first-born baby boy arrived in April and so far it has been amazing. We are really settling into parenting and everything that it entails. I usually fly out of Denmark several times a month to consult on my clients' farms in Europe, but I have been able to take a paternity break, thanks to my wonderful colleagues providing cover for me. I'll miss Groundswell this year as well, with severe FOMO already developing.

The second big news for 2025 has been that I have taken over the family farm with full ownership. 250 hectares of prime arable crop land (among the top third of soil quality in Denmark), almost all of it is combinable.. I'm humbled to be given this opportunity and feel so thankful for the support I've received from my partner, Mathilde, and especially my younger brother and sister, who have been so encouraging and understanding throughout the whole process. Now I'm the sixth generation at Barløsegaard, and I look forward to doing my absolute best to take care of the family farm while it's my responsibility. What has worked well for my family is that from the very beginning, my parents were strongminded and decisive on what they wanted: to pass the farm to one child on the best possible terms with a minor cash gift and no liability to siblings. Because our parents were settled on their goal from the start it has been easier for us siblings to accept the terms. Is this the best time in history to take over the farm? Most likely not, but there's no such thing as 'timing the market' for a farm purchase. However, with a new property valuation tax reform on the horizon, we had another incentive. Farm succession in Denmark basically comes down to the following rules: 1) pass to family at 15% below full market value, 2) seller can keep promissory note on the estate (difference from market value to full mortgage), 3) if needed, pay 10% inheritance tax on cash/assets passed down, 4) seller will be capital gains taxed, but with an inflation adjustment.

Above. Winter OSR undersown with living mulch mixture of 25 kg/ha (75% lucerne, 15% red clover, 10% white clover, weight based). The clear canopy effect of OSR has reduced the size of the undersown living mulch compared to no canopy to the right.

The current big threat/opportunity to farming conditions in Denmark is yet another push for even tighter environmental/nutrient legislation, which will force the profitability of arable farming even lower. This should have a negative farmland pricing but it's looking like this is further exacerbating the huge gap between the earning potential of farmland and its market value, which seems to keep rising. Many non-farming entities (government included) are heavily buying up farmland, which pushes the price even higher.

Barløsegaard has been no-ploughing for 25 years this season and with no-tillage crop establishment for the last 12 years. The majority of the land is what Brits would call boys land, with 15-25% clay in a sandy loam clay mixture (almost no silt). The parent material is glacial tilth and our soils are very deep with no bedrock (I think it is at least 800 metres below). Our latitude is at 55.3, which corresponds to slightly north of Newcastle. We're receiving around 700 mm of annual rainfall and 1800 hours of yearly sunshine.

We have been running our modified Primewest Cross Slot drill for nine seasons now and are really getting comfortable using it for most drilling options. It's especially great for small seeds and grass/clover because of the advanced depth control and non-hairpinning from the hybrid disc/blade opener. Normally, we want to grow 50% of the farm with winter wheat, 25% with winter OSR and 25% with a spring break crop (faba beans, malting barley, oats). Sometimes we grow grass seed crops, but those are variable in acreage and contract depending. We keep a minor

but healthy population of Italian ryegrass, black grass and rats-tail fescue in some of our fields, so they play an important consideration on the crop management. Our core crop rotation is winter OSR followed by winter wheat, then spring break crop, then winter wheat, then repeat. Wheats are farm-saved feed variety blends of the three to four of the newest top performers selected on high disease tolerance (high untreated yield). OSR are hybrid variety blends of three top performers from distinct breeders with special attention to stem health including verticillium tolerance.

I have recently finished a large soil sampling scheme. Because of our tillage approach, we have a clear nutrient/pH stratification with almost double the amount of phosphate and potassium in the top 10cm of our soils and 0.5 lower pH compared to the 10-20cm interval. We have not limed the soils for 25 years, but this autumn we will apply a baseline of 2 ton/ha of calcium lime with 2.5% magnesium. Afterwards, we will correct the odd sub areas where magnesium might become close to potassium levels. We can also conclude from this sampling that surface applied phosphorus and potassium are useless in our no-till system. Hence, we now apply a modest NPK fertiliser (50% of expected PK grain removal) seed bed placed in the autumn for winter wheat so we only have to apply N and S in the spring for winter wheat and OSR.

March, April and May have been very dry (although we luckily got 100mm of rain in late May), so again we can conclude that large nitrogen doses early on (in mid-March) are preferable to multiple modest split doses going into May. I'm a big believer in using the right type of nitrogen source. We try to avoid nitrate-N and instead prefer urea and ammonium sources. These N-types are safer to apply in large doses early without a leaching risk and they supply nitrogen for a extended period of time. The best part is that they are also the cheapest option. This approach works great together with foliar applied fertiliser (total nitrogen applied for winter wheat is around 180kg/ha with the target yield around 10 ton/ha. We're still in the early stages of getting used to foliar feeds at our farm, so we buy the expensive premium solutions from nearby Flex Fertilizer System. This season we have tried 3x 80 kg/ha of a NPKS 16-1-3-1 with 1Mg. (In Denmark we always list nutrient content in raw non-oxidised forms.). They work great together with our fungicide sprays but we have learned that evening and night applications are preferred in order to not burn leaves. Our wheat disease pressure is modest with an long-term average 100kg/ha yield benefit from fungicide control. I try and capture this as economically as possible by applying a T2 fungicide spray at 33%-50% label rate and a T3 at 25-33% label rate.

Recently, we have had mixed experience with no-till and min-tilled spring malting barley and this season we have avoided growing spring barley. Instead, we have focused our attention on spring faba beans and winter milling oats.

Winter oats are not a common crop in Denmark. I have trialled them on a minor scale for two seasons and this third year

Winter oats with third year lucerne living mulch below. We will make sure to bale the oat straw to help the lucerne regrow and hopefully make a nice autumn forage cut.

Our best winter wheat field this year. There's a large height difference between the ears because of the early September drilling date. We normally drill at the end of the month so there's less difference.

The same winter oats from above.

Undamaged to the left. Herbicide damaged to the right. From autumn residual herbicides.

we are now growing them commercially in a 25 hectare field. I'm very excited to find out their yield.

Winter wheats are currently looking good. I hope that the foliar feeds, with the last one applied at the end of flowering, will extend will extend grain fill, keep the wheats green and help them through this current heatwave.

One interesting observation has been the visible differences between variety blends from early drilling compared to same variety blend from later drilling. Varieties are more uniform when sown late.

Last autumn, wheat establishment was challenged by herbicide injury (I guess hybris has struck as I'm my own agronomist) and slug grazing. In the future, we'll apply slug pellets 14 days ahead of our drill and make sure not to spray residual herbicide in warm weather on large wheat seedlings.

We're not doing any exciting cover cropping this summer. I have spent many years trying different approaches but currently we will drill raddish/oat mixture straight after the combine.

Living mulch adventures

Our current development goal is the ongoing efforts of developing our lucerne-based living mulch farming system. (Use #livingmulch on X to follow my journey.). With this method I hope to develop a reliable mixed farming system with quality forage production, while annually cash cropping 80-100% of my farmland. The core idea is to undersow winter OSR with 25kg/ha lucerne (or a mixture of lucerne, redclover and white clover) in early August. During the first autumn, the legumes will be a free companion crop together with the OSR. We will then take good care not to broadleaf spray the OSR so we have a green bottom of living mulch below at the time of harvest. Then, after the OSR harvest, we will mow the field and living mulch will regrow. We will take a forage cut six to eight weeks later and no-till winter wheat at the end of September. During the wheat crop we will again make sure not to spray out the living mulch. (This will be a fun challenge for your agronomist.). The key is to chemical mow (temporarily stunt) the living mulch in order to make a great wheat crop. Post wheat harvest it's the same: mowing, regrowth, forage cut, no-till next winter cereal, which this year is winter oats. I hope my winter oats will let my lucerne survive so that this autumn I can take yet another forage cut before reseeding into winter wheat. Furthermore, I'm trying to fit ultra-early-drilled dual-purpose graze and grain winter cereals into the living mulch system, but that is currently very niche. For my next piece in Direct Driller I will know more from this season's trials and we can take a deep dive into living mulches. Good harvest to all of you.

I'm currently a full-time agronomist with Copenhagen-based Agroganic. Please get in touch if you have any questions or ideas to share and discuss. We can always learn more when working together.

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FARMER FOCUS JOHN PAWSEY

I get asked a lot of questions about farming stuff, most of which I have no idea what the answer is. So I usually make something up that sounds right. However, I do suspect that there will always be an element of truth in whatever I say in those situations because after 40 harvests, I must have picked up some knowledge along the way. In any case, even if I come up with something which is quite obviously not true, who actually cares? We all know now that it's not about literal truth in an empirical sense; it's about lived experience and emotional authenticity. It is my truth, as people say today.

One of the most common questions I get — and you must all get this too, being readers of Direct Driller, challengers of the farming status quo — is where do you get your advice from?

Usually, the question is centred around agronomic advice, and so for the purpose of this article, that is what I will focus on.

When we converted our first fields to organic production in the autumn of 1999, I still had my non-organic, independent agronomist. Alice will tell you that I spent more time with him than I did with her, which is probably true. He was my fixer. My dealer. Having made the organic pledge and not wanting the bromance to die, I persuaded him to come with me on my Magical Mystery Tour, hoping that he would accept the invitation to be my post-drug buddy and weather the painful cold turkey period as we weaned ourselves off chemicals. I'm sorry to say that he quickly relapsed and went back to the dark side, whereas I ventured boldly into the Post-Acute Withdrawal Syndrome phase.

To the rescue came the **Organic Conversion Information Service** or OCIS, which ran from 1996 until 2006 under the DEFRA Organic Farming Scheme. They offered me free unlimited telephone support, a visit from an accredited adviser to put a conservation plan in place on my farm as well as some guidance on soils, organic certification and other grant applicable schemes. Quite why DEFRA have not offered the same service for today's farmers who are wanting to climb aboard the regenerative train is beyond me. It was an excellent service. We need to suggest an alternative service for the Sustainable Farming Incentive 2026 offer. As a first attempt, what do you think about the Transition Initiative for Tillage Sceptics? We may need to work on the acronym.

My accredited adviser introduced me to the Elm Farm Research Centre (ERFC), now the Organic Research Centre (ORC), (www.organicresearchcentre.com), as it was the ERFC that accredited those advisers in the first place. EFRC/ORC was the greatest source of advice in my early days. Pretty much all of the stuff that gets re-researched today has already been done by the ORC and partners. Nothing is new. Some examples:

Through the DIVERSify project,

ORC trialled intercropping cereals with legumes (eg wheat with beans, linseed with oats), resulting in 73–74% reductions in weed biomass and improved yields, thanks to resource synergy and weed suppression.

They explored multi-species leguminous cover mixes, helping to improve nitrogen fixation, structure and soil biology. That work emphasised the use of cover crops for soil tilth, nutrient cycling, moisture regulation and erosion control, especially when aligned with reduced or no-till methods.

ORC partnered in EU-wide trials (eg the Oper8 project) to test mechanical weeding tools, living mulches and alternative weed control, supporting field labs and events that promoted practical adoption.

In projects like TILMAN-ORG, ORC evaluated reduced tillage in organic systems to understand its impact on weed communities, soil structure and resilience.

Beyond trials, ORC championed participatory research, co-designing experiments with farmers to ensure real-world relevance. They also contributed to EU projects (COBRA, SOLIBAM, SUSVAR, CORE Organic II) and delivered farmer training, field labs, events and advisory services.

The list goes on. You should look into a few of those projects. They are easily

found on the internet or your favourite AI wangle.

Then we have **Agricology (www.agricology.co.uk),** which is another excellent source of advice. A lot of ORC research and other brilliant stuff can be found on their platform. I am sure you know the site well.

There is also the wonderful **BASE-UK (www.base-uk.co.uk).**

In the year 2000, a group of French farmers from Brittany formed an organisation called Bretagne, Agriculture, Soil and Environment or 'BASE'. It was and still is a network of farmers wanting to share information on ways of farming that not only produced food but improved soils and nature as well.

One of BASE's leading lights, Frédéric Thomas, started to spread the word and in 2012 the good news arrived across the English Channel — or 'la Manche' as our Gallic neighbours insist — and BASE-UK was born. Helpfully, the French founders changed the name to Biodiversity, Agriculture, Sol and Environment to enable the organisation to travel better and all we had to do was to just insert an 'i' into 'sol' to make 'soil' and we were away.

I don't connect as much as I should with BASE. I need to do that more.

YouTube. How many times has your partner rolled over in bed and asked incredulously, "What are you watching?" with an emphasis on the word 'are'. In the Pawsey bedroom, this question is followed by Alice saying, "Can I put on the Archers now?" What's happening here is that I have gone down a rabbit hole of being fed ingenious videos of farmers demonstrating pieces of homemade machinery for pulling out docks and creeping thistle. The best ones are from the subcontinent where protective guards are a no-no. The juxtaposition of successful weed control and a man potentially losing a limb is oddly captivating. Alice's question is not actually a question. What she really means is, "Turn that screen off. I'm putting the Archers podcast on.". It's actually a wonderfully soporific show. All I get is, 'Tum ti tum ti tum ti tum', and the next thing I hear is my morning alarm. Brilliant! Anyway, that's YouTube's farming community, the motherlode of all agricultural knowledge.

Still on social media, I find Twitter (I refuse to call it X) useful , but you have to curate your experience. I make personal lists. My farming-related ones are: agricultural policy influencers, farmers I have met or know, strip and no-tillage agriculture and of course, organic farmers. Slot your relevant farming heroes into the relevant categories and you've got a concentrated feed on what is happening in the world of enlightened farming. All the nonsense is bypassed.

Then there is **meeting actual people**. I know, weird. They smell, some have accents I don't understand, they puncture easily and sometimes they go on a bit, but meeting actual people is the best. Especially readers of publications like Direct Driller where we accept that we don't have all the answers. We are on a never-ending journey of discovery and we understand that to learn, to take us to the next stage, we have to share knowledge with each other. After 25 years of giving farm tours at Shimpling Park, I've never had a group leave without someone solving one of my many agronomic problems.

So, having successfully survived rehab, did I ever replace my agronomist? No, but we possibly should. I say 'we' because the next generation of Pawseys are chomping at the bit to have a go. It's not all about me. Although I do have stuff to pass on, so much has changed in the organic regenerative space over the last ten years, and that is for them to discover, to adopt and claim as theirs. Enlightened agronomy, it's happening. If you don't believe that it is, then you'll just have to accept that it's my truth.

REPORT SUGGESTS **REGENERATIVE FARMING PIONEERS** ARE OUTPERFORMING **CONVENTIONAL APPROACHES**

Written by Mike Abram

A new benchmarking report comparing 78 regenerative farms across Europe provides evidence of how regenerative farming can outperform the average conventional system

Pioneering regenerative farms across Europe are delivering 20% higher gross margins than the average conventional farm, while using 61% less synthetic nitrogen and 75% less pesticide. Yields were only 2% lower on average, despite those reduced inputs, with many farms achieving parity or better.

Those are some of the headline figures from a new report from the European Alliance for Regenerative Agriculture (EARA), which collected survey data from 78 regenerative farms, covering a total of 2144ha, across 14 EU countries between 2021 and 2023.

Market gardening

The report marks the beginning of EARA's farmer-led research programme, which aims to measure what Europe's most pioneering farmers are achieving, both agriculturally and ecologically.

To do that, the researchers have developed what they call a novel, farmer-centred index called 'Regenerating Full Productivity' (RFP) to understand and track real-world productivity of agriculture.

This metric is designed to capture the full spectrum of land stewardship outcomes – agronomic, ecological and economic, the report authors state. It builds on the conventional Total Factor Productivity (TFP) model used by many governments to compare trends across farming sectors and evaluate sector competitiveness.

"RFP integrates field-levels measurements, farmer-generated data and satellite imagery, benchmarked at local, national and European levels," the report says.

Using this metric the report says the regenerative farmers delivered 33% higher regenerating full productivity on average, in the study period of 2021 to 2023, with gains ranging from 13% to 52%.

The data also points to fields on regenerative farms achieving over 25% higher photosynthesis, 24% higher soil cover and an increase in plant diversity of 16% over the period 2019-2024.

Cover crops

"This advantage means more biodiversity and better soil health," the authors claim.

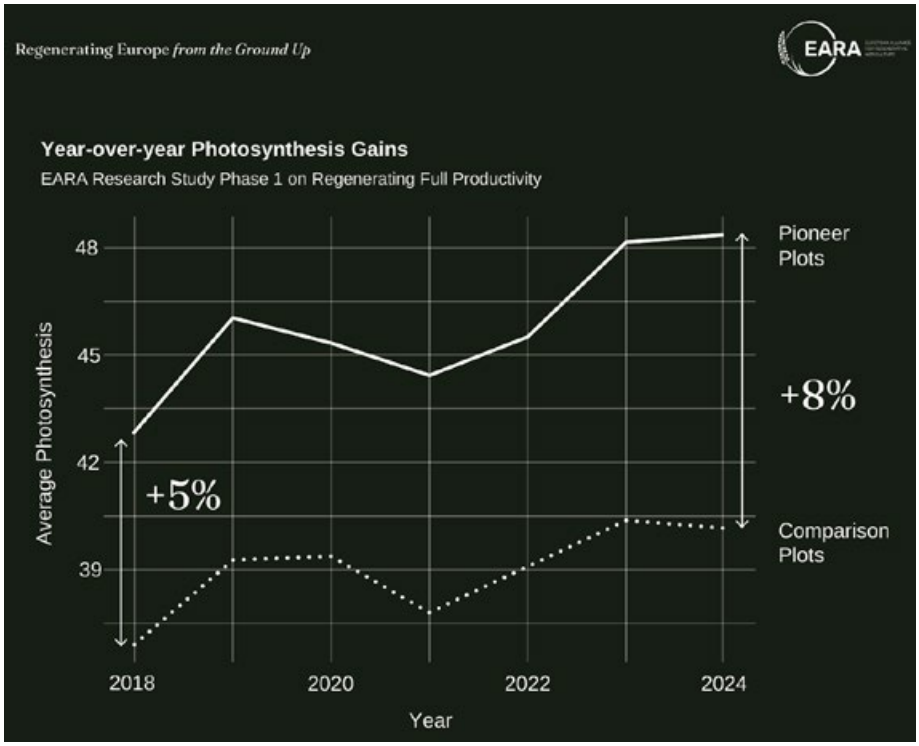
Data for the report was collected via a survey of the 78 regenerative farms, where the farmers provided information about crop yields, input use, feed sources for livestock systems, fuel and irrigation use for a self-selected three "best" fields.

Farmers were specifically asked to choose fields where the impact of regenerative management had had the greatest effect.

The farmers were also asked whether they thought biodiversity in the field had increased over time and how it compared with their neighbours' fields.

Comparative baselines for yields and input use from average conventional farms were set using data from national and EU-level datasets.

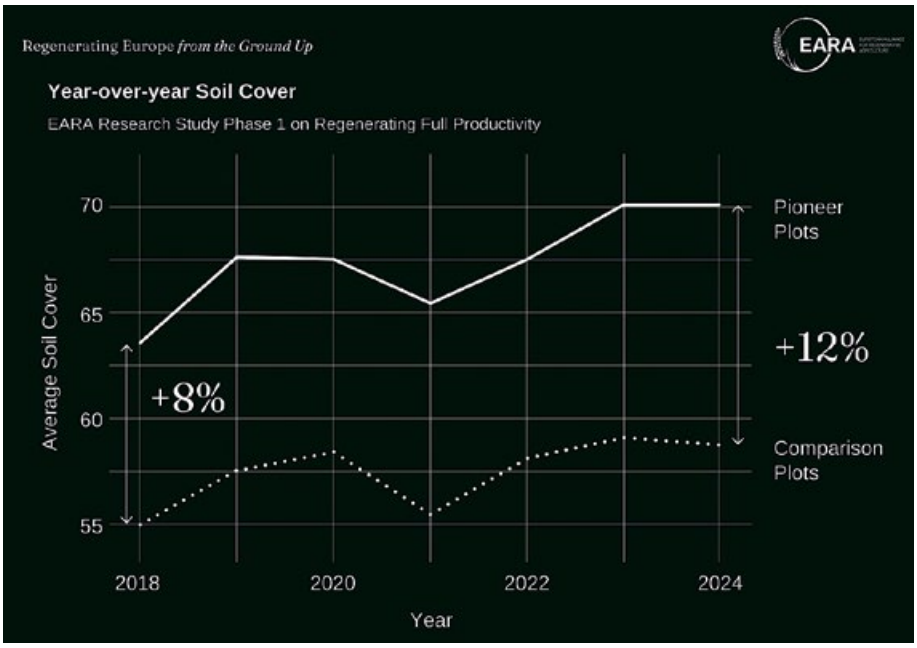
In addition, the survey data was supplemented using satellite data from the three fields, plus nine neighbouring conventional fields with same use type, soil and climatic conditions.



2025_EARA Research Study Phase 1 on Regenerating Full_Photosynthesis

NDVI (normalised difference vegetation index) imagery from satellites was used to assess photosynthesis and soil cover, while variations in NDVI were used to calculate plant diversity, with larger variations in NDVI associated with greater plant species richness.

Remote sensing data could also be converted into estimates of land surface temperature and evapotranspiration



2025_EARA Research Study Phase 1 on Regenerating Full_Soil Cover

rates.

The results counter the assumption that Europe's food security depends on chemical-intensive farming, the report claims.

"Instead, they reaffirm that regenerating systems, whether rooted in agroecology, conservation agriculture, organic farming, syntropic agroforestry or other disciplines, are not only viable but already superior in most contexts.

"Moreover, the progressive reduction, and eventual elimination of synthetic inputs is not only feasible but also economically and environmentally beneficial," it states.

The authors calculate that a 50% adoption of regenerating forms of agriculture could more than offset current EU agricultural emissions. "If scaled EU-wide, the study estimates RFP-informed transitions could mitigate an estimated 513 Mt CO2e/year, over three times the current EU agriculture sector emissions.

"By transitioning, the sector would become nature-positive and climate resilient, ensuring food and fibre security while reversing ecological degradation and improving food quality and public health," the authors claim.

Enhancing soil health, water retention and biodiversity reduces the frequency and severity of climate-induced shocks, such as droughts, floods and crop failures, they continue.

Evidence from across the farms using the collected remote sensing data found that fields on the regenerative farms were 0.3C cooler during summer months than surrounding conventional fields, for example.

EARA is positioning the use of the RFP metric, not just as a research tool, but as a practical performance system to support farmers, financiers, policy makers and supply chains.

For example, it could be used to support eligibility and targeting of agricultural subsidies and climate-related finance tools, helping align incentives with outcomes, it suggests.

The next phase of the RFP project will involve more farms from across Europe and add new measures for things like soil carbon, water use, and local economic value.

Digital tools are also in the works to help farmers track their own RFP scores, compare with others, and plan improvements over time. EARA plans to work more closely with co-ops, supply chains and funders—so that better performance can lead to better support.

Overall, a key aim is to make RFP something farmers can use to build stronger, more resilient businesses, as well as become a recognised tool in policy and regenerative investment.

Sector	How RFP could drive change
Policy	Reward real outcomes in support payments
Finance	Tie loans / insurance to ecological performance
Supply chains	Enable traceable, regenerative sourcing
Farmers	Guide decisions and comparisons
Public / NGOs	Improve transparency and advocacy messaging
Governments	Track ecological performance and national goals

Regenerating almond production in Greece

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AGRONOMIST IN FOCUS...

HANNAH FOXALL

Autumn Crops

Despite another wet autumn crops are relatively clean and well established. OSR had reduced CSF grazing this year and pigeons/slugs aside, looks well. The dry spring has kept diseases down throughout flowering and crops are now podding up nicely. Harvest will soon be upon us and we'll see how yields have fared.

Premium Crops contract OSR crops with premiums above '00', such as HEAR (high erucic acid rapeseed – industrial uses like slip agents) and HOLL (high oleic low linolenic – human consumption frying oil).

Most Winter Linseed was drilled in September and established well before the weather turned. Centurion max seems to have done a good job this year, with crops being clean and unform. With the recent rains we are now recommending an end of flowering fungicide to keep botrytis out and maintain yield.

Spring Crops

The dry spring allowed earlier drilling than last year. Seedbeds were mostly excellent this year – although there was the occasional resistance to the earlier drilling opportunity, purely based on calendar date. Our view really is with the weather patterns we have seen over the last few years, we have to readjust our drilling window to a few weeks earlier.

Winter linseed, variety Atilla, Leicestershire

HEAR OSR, cereals plots 6th June

Spring linseed and rooting fibrous structure

Canary Seed proved a popular option due to its low input requirements and cost-effectiveness. The crop functions as a half-break, allowing farmers to maintain a cereal rotation if autumn cereals failed. The straw has a rough hay quality, which may be useful if straw prices rise this year. Crops are growing nicely, but have been under stress making PGR timings tricky due to varied emergence.

Spring Linseed's break crop qualities have long been held in high regard. Long, lateral roots provide excellent soil conditioning, greatly reducing slug populations in following wheats, among other benefits. Spring Linseed has handled the dry weather surprisingly well. Weed emergence has been delayed due to the dry, but this seems to be the year of bindweed and fathen. Linseed's variety of end-uses (human consumption seed/oil, enhanced nutrition animal feed etc) has kept demand and value high.

Spring Linseed, Canary Seed and Borage all have a late extended sowing window, allowing May planting, which crucially provides opportunity for farmers to achieve clean, stale seedbeds.

Trials and Agronomy

Premium Crops are constantly seeking to improve the pesticide portfolio for growers of minor crops. Premium Crops are unique in employing a dedicated 5-strong team of agronomists to provide bespoke technical support to our growers. This is through on-farm visits, writing technical bulletins, and EAMU (extension of minor crops) applications. Currently we have pending an EAMU for Emerger for use on linseed, with a target date of September to allow use in time for Harvest 2026 winter linseed.

Spring linseed variety trial with Eurofins, Derbyshire

Other EAMUs we have pending are;

- Stomp for use on canary seed
- Kinavara for use on canary seed
- Emerger on Linseed & borage
- Callisto EAMU re-submitted to widen the application timing for Linseed
- Spotlight Plus Emergency Approval for Linseed seed crops

The Agronomy team has had two new additions; James Stroude and Sigourney Kornjaca. James will cover the east midlands and Sigourney the South. Tom Oates covers the South West, Fraser Hill East/ South east and Hannah Foxall the North/ midlands.

Annual variety trials are held for Winter Linseed, Spring Linseed and HEAR, as well as agronomy trials (such as herbicide screenings, seed rate, sowing date, etc) across our crop portfolio. Testing timings and rates in minor crops is valuable to ensure crop safety, as limited data exists.

Looking forward

The closing of the SFI scheme leaves many questions for future schemes and payments. Premium Crops are proud to be supporters of the OSR reboot initiative, which is an industry initiative, to raise awareness around the impacts of CSFB and UK Oilseed rape production. This looks to produce short, condensed advice to farmers, on the best integrated pest management (IPM) methods to reduce the impact of the CSFB. We agreed as a group the advice on IPM for CSFB was in many different formats, and accessing a quick guide, difficult for growers and agronomists.

Our two sponsored PhDs will come to an end this year, and we look forward to the results. These are in conjunction with Cranfield University and the University of Lincoln and have been running three years. The aim of the Lincoln PhD is to study what drives linseed yields above ground - the ideal plant canopy and shape - to try and push yields. The Cranfield PhD is looking into rooting and how this impacts growth, along with GHG emissions.

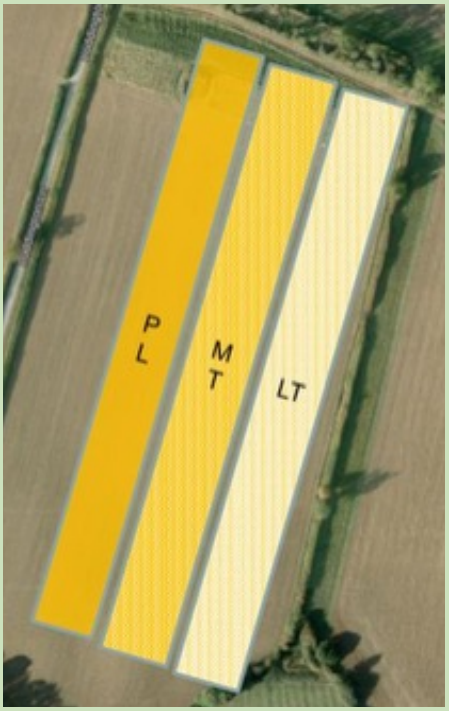
REVISITING THE **SYNGENTA CONSERVATION AGRICULTURE PROJECT**

JOE STANLEY, ALLERTON PROJECT AND
GRAHAM REDMAN, THE ANDERSONS CENTRE

Joe Stanley

Since 2017, the Allerton Project has been conducting a nationally significant long-term rotational field trial in partnership with Syngenta across five fields of our heavy-land site. The initial five-year phase of the trial, as outlined in the June 2023 issue of Direct Driller, sought to assess the production, financial and environmental implications of three contrasting tillage and establishment regimes; plough (PL), min-till (MT) and light-till (LT). This is our 'direct drill' plot, and in some seasons a tine drill has been utilised which has created an amount of soil disturbance). Intensive assessment of soil health and other environmental metrics has also been undertaken to assess the balance between natural capital services and production.

The trial was replicated at a 'sister' light-land site at Lenham in Kent, undertaken in conjunction with NIAB and farmer Andy Barr. The results of this first phase of the project were highly encouraging, indicating improved economic and environmental outcomes from the LT system.



Representative plot plan – each plot is 1-1.5ha in size across five fields

Since 2023, the scope of the original 'conservation agriculture' trial has been broadened at both sites to encompass a greater range of sustainable and regenerative techniques such as the use of biostimulants and novel fertilisers (in conjunction with Yara), organic manures and fallow breaks. The results of this exciting second phase will be processed at the end of 2026, with the project hopefully continuing beyond.

In the meantime and in order to assist growers in making informed judgements on their future establishment strategies, Graham Redman of The Andersons Centre has been commissioned to analyse in greater detail the impact on profit per hectare and rotational profit and loss of the three systems to give a more representative analysis of the financial differences between PL, MT & LT across the span 2017-2023. As Graham recounts below, taking a more detailed dive into the fixed costs, efficiencies and farm depreciation does paint a more nuanced picture of the tens of thousands of datapoints collected, which remain however highly revealing.

Graham Redman

Detailed gross margins have been easy to calculate given that all inputs such as seed rates, fertiliser and agrochemicals and yield are recorded, as are all cultivations and fuel consumption. Inputs into each hectare do vary, but this level of financial assessment generally shows the highest yielding system tends to outperform the lower yielding cultivation practice at gross margin level. However, the costs of cultivations and farm management and occupation are not accounted for at this level, only considering direct costs per hectare. The labour and machinery costs and those of operating a farm business also need to be accounted for.

So, how do the profits compare over the long term for each system? Firstly, by making estimates of how many hectares of each crop is likely to be in a typical rotation, the weightings of each gross margin can be adjusted, thereby creating a viable weighted whole farm gross margin.

Making use of standard published costings figures, the costs of the field operations are applied. Standard machinery costs assume varying capacities (likely areas per year) for each machine. In fact, no farm has precisely the right hectarage each year to maximise the use of each machine. Machinery values do not only decline when they are being used, but by age as well. This inefficiency is therefore incorporated by reducing the capacity to fit within the 250-hectare model farm system. This adds to depreciation figures. Labour rates are doubled, on the basis, that tractor drivers probably only physically operate machinery in fields for 50% of their time. Fuel costs are elevated by 25% to account for travelling time, ticking over and other events such as visiting fields for crop walking which are not accounted for in the machinery costings.

Operating a farm inevitably requires management, so an appropriate figure was included, based loosely on an additional 25% on labour and machinery. Each system had the same management charge included. Other costs such as overheads, finance and rent were taken from the Nix Farm Management Pocketbook. Each figure could be argued, but to create a notional costing with realistic inefficiencies generates a model that reflects real farming systems. The calculations were interrogated by the farm managers of each location.

The financial results, as shown in the graphs, are enlightening. The outcome

The Horsch Avatar disc drill currently in use at the Allerton Project

is clear for the light land system but not heavy soils. For a combinable crop rotation on light land, the less soil disturbance, the more profitable the farm becomes. The light-till system demonstrated the highest level of profitability, after machinery movements had been taken into account and outperformed the other two system each year apart from one, which was close enough to call it a draw (2021-22 crop year). The minimum tillage system outperformed conventional ploughing but underperformed against light-tillage. This shows a clear pattern of greater financial returns for lower soil disturbance.

The story is not so straightforward on heavy clay-based soils. Profits vary more on this farm from year to year and system to system, being more impacted by the very wet year of 2020-21, and in the following year when yields were good, they were very good. This was also compounded by the impact of high commodity prices resulting from the Ukraine war. In that year, the plough-based system outcompeted the light-till. Just one more year favouring the plough-based system in the project would leave high disturbance systems most profitable, one more year where the light-till system outperforms would compound its lead. This farm requires several more years in the study to reach an unambiguous conclusion.

Curiously, the minimum tillage which naturally fits between the two cultivation extremes in physical terms, shows the lowest profits. Perhaps this demonstrates the unclear nature of minimum tillage philosophy, with simply an intention to reduce cultivations in an unquantified manner, rather than a clear plan of action.

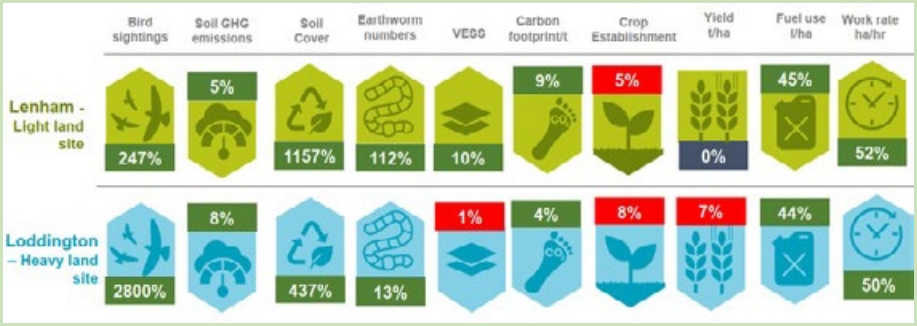


Figure 2: Selected additional metrics from Phase 1 of the project

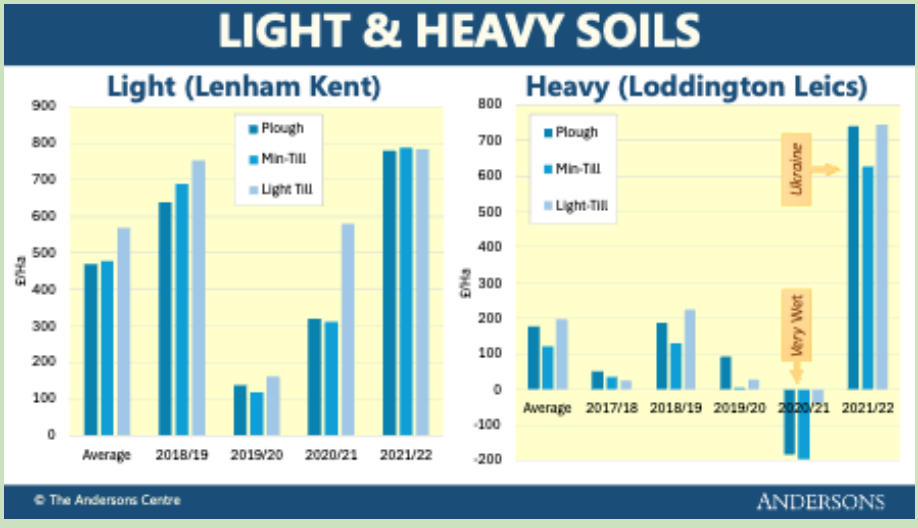


Figure 1: net profit/ha. (Note: no trials were conducted at Lenham in 2017-18)

Joe Stanley

Although not the focus of this new analysis, it is also important to note wider scope of outcomes observed during this initial phase of the project, with Figure 2 comparing the plough and light-till regimes across the two sites. As can be seen, establishment was reduced in both, though only at the heavy-land site of Loddington was final yield negatively impacted. However, at both sites the overall carbon footprint per tonne of production was reduced (alongside direct soil emissions), while overwinter bird and earthworm numbers were also improved.

The challenges of the Loddington site demonstrated in the Andersons analysis are also brought out, however, in the VESS (Visual Evaluation of Soil Structure) score, with assessments actually declining slightly in this first five-year period versus an improvement at Lenham. This fits with our wider observations both in the second phase of this project, but also from other long-term soil management work at the Allerton Project, that our heavier clay soils need more careful management in the no-till transition, and that it's in the 5-10 year period when the benefits of a reduced tillage approach become more evident. This is one of the most exciting aspects of the ongoing 'regenerative' phase of our work with Syngenta.

Graham Redman

Overall, this project is probably one of the most extensive and detailed of its type, and should certainly continue. The more years of results there are, the clearer the advice for farmers.

DRILL MANUFACTURERS IN FOCUS...

TIME TO FOCUS ON KEY PRIORITIES

Cutting per-tonne costs, boosting yields, maximising income and building healthier soils; these should be key priorities given the challenges facing the farming sector, says Jeff Claydon, Suffolk arable farmer and inventor of the Claydon Opti-Till® direct seeding system.

25 May 2025

Hanslope series clay certainly brings significant challenges and makes timeliness essential, but this spring I feel extremely fortunate to farm this type of soil. My sympathies are with those on light land because as I write this article our weather station has recorded just 63mm of rain since February, only 2mm of that in the last three weeks.

Driving around the farm this morning I was reassured to see all our crops looking well. Established at minimal cost after only two passes with a Claydon Straw Harrow and Evolution direct drill their uniformity was certainly a major topic of conversation last week when we opened the Claydon factory and farm to visitors.

It was the first time that these annual Open Days had been held since 2019 as those planned for April 2020 had to be cancelled due to the lockdown. Since then I and my team have been fully focused on developing new products to meet the needs of farmers in our home and export markets whilst expanding our global network of dealers and distributors.

Following a five-year break there has been a lot of interest in seeing the Open Days return and we were delighted with the positive response. Visitors from all over the UK came to learn more about improving soil health and reducing 'per-tonne' production costs, whilst maintaining or increasing crop yields to maximise income.

Agronomist Dick Neale, Technical Manager for crop protection specialists Hutchinsons, discussed how Claydon Opti-Till® benefits soil health, James Lane, Digital Services Specialist for Omnia highlighted the advantages of using a standalone farm management system, while Grant James of Sea2Soil outlined how organic soil improvers help conventional and organic farms.

At a time when government support for farming is diminishing and many are reconsidering how they establish their crops, these events provided an opportunity for growers to find out how to future-proof their businesses and achieve a better work-life balance by reducing the cost and time involved in establishing crops to as little as 20% that of plough-based or min-till system. Claydon's 'Think' campaign shows how Opti-Till® achieves this (claydondrill.com/think-change/).

Feedback from customers using Claydon Opti-Till® shows that they are very happy with the cost/time savings, crop performance, yields and soil health benefits, which has also been reflected in high prices for used Claydon equipment when it's due for change. We are constantly evolving and in the last two years launched the Evolution mounted direct drill and toolbars (which can be fitted with front discs to work very effectively through cover crops and in most conditions), front hoppers, mole drainers and straw harrow hoppers.

Don't Delay

One of the points which I emphasised to our guests was the importance of applying for grants as soon as they become available. On the Claydon farm we made sure to do that at the earliest opportunity last year and were fortunate to secure £88,995 in annual SFI rotational options payments and £5408 in Whole Farm Management Payments. The scheme is for three years, and the first quarterly payment arrived in May.

Compared with IACS, the Sustainable Farming Incentive (SFI) scheme seems unfair because the cap on funding and its sudden closure this year meant that many farming businesses could not benefit. Hopefully SFI 2025 will bring equally good opportunities but be sure to act and be ready as soon as the next funding round is announced.

On the Claydon Farm we will drill cover crops on all our land

Jeff Claydon (pictured right in the orange jacket) showing visitors a crop of winter wheat in ideal condition, having been established using the Claydon Opti-Till® System.

Dick Neale of Hutchinsons, pictured in a soil pit on the Claydon Farm during the recent Claydon Open Days, explains how Opti-Till® has created ideal growing conditions for crops. Watch the video at: claydondrill.com/video-gallery/claydon-open-day-hutchinsons-soil-health-talk/

immediately the combine leaves the field, then spray them off before the winter wheat goes in. This will further improve soil structure/health and the SFI payments for catch/cover crops and direct drilling will easily cover the cost.

The need for speedy action also applies to the Farming Equipment & Technology Fund (FETF) 2025 grants, for which the application window opened on 29 May and will close at midday on 10 July 2025. There are three main categories in which new Claydon machinery qualifies for funding.

- FETF44 covers direct drills. All Claydon Evolution mounted drills from 3m to 6m wide and Claydon Hybrid trailed drills from 3m to 8m qualify for a payment of up to £15,067.
- FETF207 is for an 'air drill for establishing cover crops' - the new Claydon NutriSeeder qualifies for £1,575.
- FETF208 is for a tractor mounted stubble rake and any Claydon Straw Harrow from 7.5m to 15m wide qualifies for a maximum of £6,720.

Low commodity prices are undoubtedly making farmers cautious about spending money and the situation is not helped by confusion over the various grants. But that makes it even more important to consider a more efficient approach to crop establishment as the cost savings will quickly offset the investment.

There is a big danger in delaying ordering machinery. It could mean that even if you qualify for a grant, extended manufacturing lead times and lack of dealer stock might result in it being too late to take advantage of the savings this season. There are already savings to be made using Claydon Opti-Till® without SFI payments. But add the value of the SFI payments which you could take advantage of with the right equipment combined with the FETF grants and it's a considerable amount. These combined savings could more than pay for your new machine in the first year, but though nice to have they should not hold you up or be the sole reason for investing. The Claydon website (claydondrill.com/our-customers/) features examples of how our customers across the country have benefitted.

Drainage is key

One of the common questions asked by the visitors to our Open Days was how we have achieved such good crops given the exceptionally dry weather. Rather ironically, the answer is that over the last year we have focused on ensuring that the drainage system and soils are in good order. Dick Neale explained it by saying:

"Crops on the Claydon Farm are in lovely condition and very uniform, with nothing to suggest that they lack water or are struggling to grow. Although the soil surface is hard that is solely due to the dry weather, not compaction. Just add water and it will be fine.

The soil is in perfect condition and despite the surface layer being dry crops are never stressed.

"The very high number of worms in the soil is multiples higher than normal, which is important because crop roots use worm burrows and fissures between the soil blocks to get to depth. This structure also builds resilience, allowing water to permeate down through the profile in a controlled way during heavy rain and ensuring that the crop does not become waterlogged. Conversely, in dry times water is absorbed and stored throughout the soil profile, so the crop is always able to access moisture.."

More from Dick Neale can be see here: **claydondrill.com/video-gallery/claydon-open-day-hutchinsons-soil-health-talk/**

The extremely wet autumn of 2023 highlighted small areas where drainage was sub-optimal and these were rectified by installing new plastic main drains and laterals, then moleing over the top to take excess water down to them. We moled over 200ha last autumn, but some fields which were too dry we left until the spring. In March, while the soil was sufficiently moist to form stable moles, we went through 40ha of standing wheat at up to GS31 and oats after drilling. The dry weather since then has allowed them to set hard, so they should retain their shape and last for many years.

The combination of improved drainage and growing summer covers/cover crops under SFI has done more than all the subsoiling in the world. All our crops are in excellent condition, including the Elsoms Lion spring oats which we drilled in mid-March with our 6m Claydon Evolution direct drill and twin front hopper, with fertiliser placed directly in the seeded band along with 30kg/ha of spring beans which qualify for a £55/ha SFI payment.

On land which grew what may be our last crop of oilseed rape in 2024 we were also able to place fertiliser in the band with oat seed using our Evolution drill. Given the dry weather we applied YaraMila Actyva S (15.6-14.6-14.6 + 6.5% SO3) at up to 200kg/ha as the yield potential of our heavy land justifies a significant investment in fertilisers and ag-chems. Placing N, P and S fertiliser, directly in the seeded band certainly helped the crop to get off to a strong start and this season is showing a big difference on small areas missing the fertiliser!

We are open-minded when it comes to trying out new ideas and products. Currently we are trialling Sea2Soil, a product containing amino acids and nutrients, which acts as a soil improver to feed beneficial soil fungi and bacteria around

This field of Elsoms Bamford winter wheat was in ideal condition in mid-May, despite having received only 63mm of rain since the beginning of February.

the plant rooting zones. In turn this benefits and feeds other vital parts of the soil microbiome such as earthworms which improve soil structure, drainage and organic matter. The manufacturer claims it provides a vital boost to plant growth and health especially in the crucial early crop establishment phases and works across a wide range of different crops. We will see whether it has made a difference when the trial area is harvested.

Having dropped oilseed rape, which left the farm at harvest, our biggest problem this harvest could be having enough space in the grain store for all our wheat and spring oats, so we might have to consider building another!

Inter-row hoeing pays dividends

Soil conditions this spring were ideal for inter-row hoeing, so we took the opportunity to go through 60 per cent of our wheat and oats with the 6m Claydon TerraBlade. This enhanced the already excellent control of grassweeds achieved with the pre-emergence herbicides in wheat by taking out the few remaining and potentially herbicide-resistant weeds growing between the banded seeded rows. It also enabled essential control of grass weeds in the oats as there are no chemical alternatives.

We began experimenting with inter-row hoeing in cereals ten years ago and have used our TerraBlade on a commercial scale for the last seven. When developing this very effective, low-cost implement we evaluated various commercial camera guidance systems, but they were designed primarily for use in vegetable crops, and we found difficulties working in cereals. The ideal time to hoe cereals is GS30/31 but the height of the crop made it hard for cameras to accurately define the rows, particularly on windy days and headlands where drill rows intersect, which resulted in false readings, variable results and crop damage. The cameras also added significant cost, complication and maintenance.

This wheat was hoed with the Claydon TerraBlade, which removed weeds growing in the 15cm area between the seeded bands at 33cm centres.

The standard guidance system on our previous drill tractor was much less accurate than the one we have now. Although drill rows were straight and easy to follow it wasn't accurate enough to guide the TerraBlade, which resulted in it being manually steered.

Now the VarioGuide RTK on our Fendt 942, which is used with the 6m Evolution to drill cereals in 17cm bands, and on our Fendt 724 that operates the 6m TerraBlade, has taken inter-row hoeing to the next level. Accurate to +/-2cm, it has transformed the speed, accuracy, ease and effectiveness of this vital operation. Operating at 10 to 12 km/h, the TerraBlade averages 6 to 7ha/hr and as I sat there with the tractor steering itself it was nice to feel that we are winning the battle against grassweeds and heading into harvest with some very clean, strong, competitive crops.

Agrii blackgrass trials highlight just how bad the problem can get if uncontrolled with effective herbicide and stubble management programmes.

Thank you IAgrE

In closing, I would like to say a big 'thank you' to The Institution of Agricultural Engineers, and to its President, Dr Mark Moore who presented me with an award for my 'Contribution to the Land-Based Sector' at the organisation's Annual Awards Ceremony in May.

It is a real honour that the IAgrE has recognised my contribution to the agricultural industry since founding Claydon Yield-o-Meter in 1981. It has been an exciting, often challenging, journey and in those early days I could never have imagined that the company which bears my name would reach the position it is in today.

As an arable farmer who has always been interested in agricultural machinery I have constantly experimented to find new ways of operating more efficiently and effectively. The range of Opti-Till® machinery which I and my team have developed over the years has helped our customers to benefit from that expertise.

I believe that the role of technology will grow significantly as Claydon continues to develop and move forward. Our latest drills already incorporate the ability to place crops, companion crops, fertilisers and crop protection products in one pass, which will help the farming industry meet the challenges of the future. I think we have a design set for the next quarter-century but will always be looking ahead.

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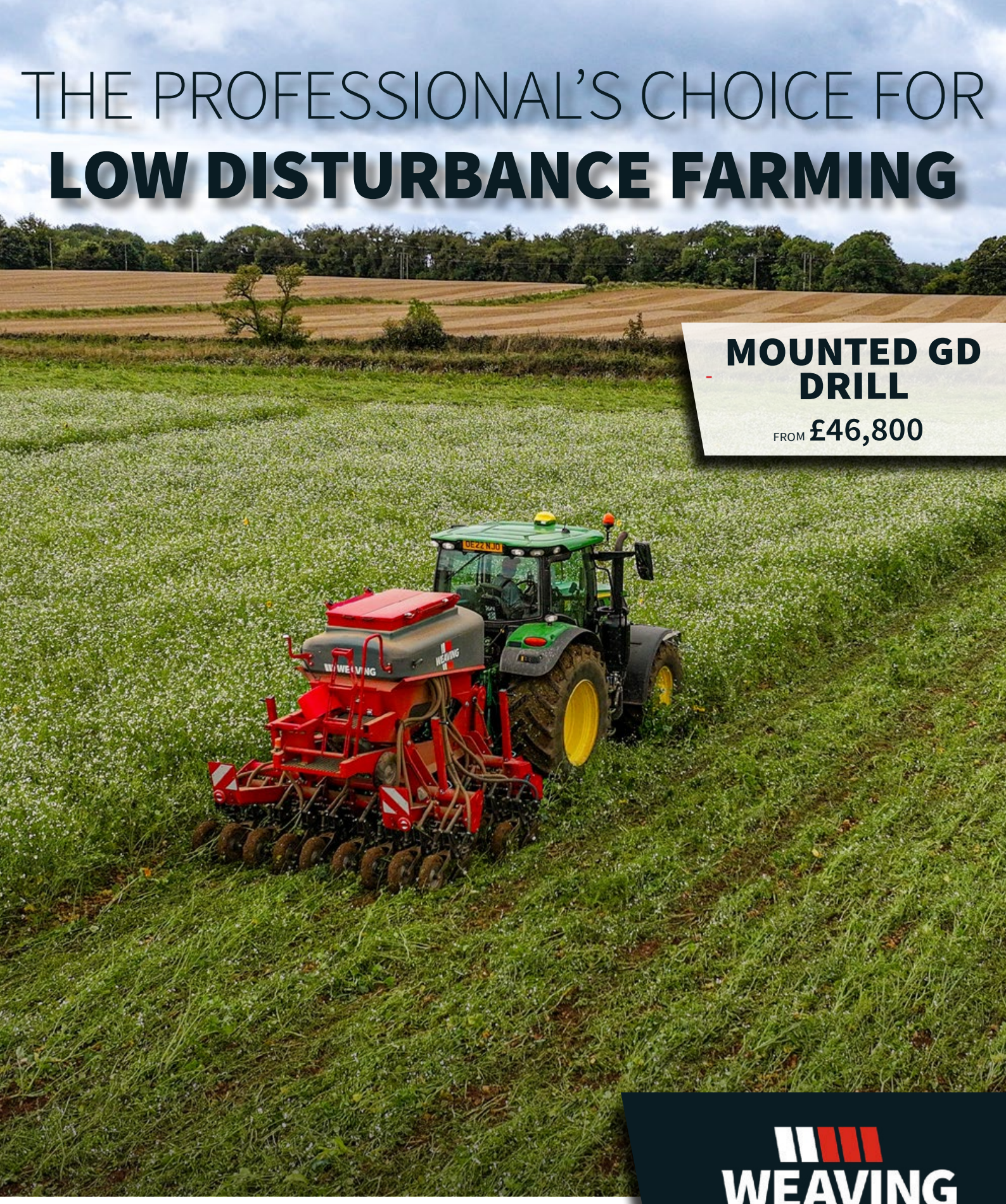

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FARMER FOCUS
ANDREW JACKSON

We were always told that rainfall was the limiting factor to yield in our part of the world, which is North Lincolnshire. We received 146mm of rain up to week 25 of the year, two-thirds of this fell in the first six weeks. The annual average rainfall is 632mm, so we have received less than half of what could be expected. Our sand land wheats are variable to say the least, although we must be thankful for the recent rains which arrived just in time to revive the wheats, with their curled-up flag leaves, on the better bodied loams.

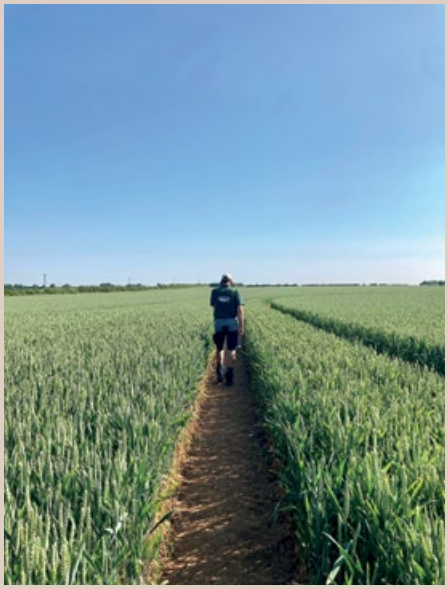
Last year, we trialled growing beans and oats together (boats). We wanted to find a break crop which would be more reliable than OSR. We were advised not to go for any inputs at all except for seed. Tthis worked reasonably well as both elements of the crop matured at the same time, and we were able to combine them together. We used a local mobile seed cleaner to separate the two elements of the crop and then the beans were cleaned a second time, to be used for bean seed in both our spring bean crop and our spring sown boats crop. Due to the high seed rates used when drilling beans this represented a good saving on buying in bean seed. However the oats turned out to be a low bushel weight and I have had to sell them into the livestock feed market at a discounted price.

On the day of drilling this year's boats, Anna and I thought that we could just fill the grain drill with oats out of the shed, but after half a day of removing blockages and only completing two headland breeds, we had to make a phone call to Josh to ask if he could come with his mobile seed cleaner and clean enough oats for our boats seed requirements. There have been many trials on the optimum seed rate for beans and oats. This year, I went for 102kg/ha of oats and 225kg/ha of beans. (I cannot say if this is correct or whether it will work.) The oat element is being grown for Wildfarmed. (All the WIldfarmed wheat is on an SFI low input option.) However, to avoid last year's low bushel weight on the oats, I applied 40kg/ha of nitrogen pre drilling and another 40kg/ha post drilling. I have just read an article which stated that oats responded well to a foliar nitrogen application if applied just before ear emergence — maybe something to try next year. Apart from a sap amendment, there have been no other applications. The boats are a roadside piece, which is always scary. However, despite the dry weather, they look great and will hopefully become a more reliable break crop than OSR.

This year Wildfarmed have favoured the use of wildflower strips for pollinators, as opposed to bicrops, but by the time I knew about this, my SFI application was complete and I decided to stick to the planned drilling of our boats. There is a cost to the separation, something that has partly put Wildfarmed off the bi-cropping. However I figured out that the bean element will contribute nitrogen to the next year's cropping and this has a value which can be set against the separation and cleaning costs. Not to mention reclaiming 26 tonnes of bean seed this year for this spring's sowings.

Our spring sown beans look much better than last year. As mentioned, we used our own cleaned untreated seed and chose to place the beans after grass seed in the rotation. Last year, after termination of the grass with roundup, we direct drilled into the field, resulting in good establishment. This year, we were advised to trial drill into a seedbed that had received a light cultivation, the theory being that the cultivation would release a little locked-up nitrogen to get the crop started.In practice, one pass with the Horsch Joker appeared to be detrimental to the plant population. However the combine yield meter will provide the verdict. Although we have low grass weed populations, growing grass seed and now Wildfarmed wheat gives us very little opportunity to control grass weeds. So the spring bean crop is seen as a time when we must throw the book at any grass weeds. We set off

intending to grow a limited area of a 5-way blend of hard bread wheat for Wildfarmed, the balance of our wheat being predominantly our 12-way soft wheat blend, to which I added some Bamford seed last autumn. Wildfarmed then put a call out for soft wheat, and we then, rightly or wrongly, committed our soft wheat to Wildfarmed, all the



Wildfarmed wheat is on an SFI low input option. We have one other field of wheat, which is a field of Typhoon grown in a second wheat slot. All the wheats have received three Sap tests and amendments. They have been given 140kg/ha of nitrogen and two foliar tenders of 10kg/ha, except for the Typhoon, which received an extra 60kg/ha because it is a second wheat.

The dry time is really starting to take its toll. When roguing the crops, I noticed they looked quite sorry for themselves. Which crop (the hard wheat, soft wheat or the second wheat) will yield the biggest margin over costs is anyone's guess.

Last year, our liquid nitrogen making plant came into action. However I was so focussed on avoiding scorched leaves that I diluted the product too much. This may have been detrimental to our yield, but as my son, Luke, said, "Dad, if you only got one thing wrong and you know what it was, then it's easy to fix." The primary reason I chose to make my own liquid nitrogen was not the cost saving but the fact that every bought-in foliar nitrogen product I had purchased had caused an element of scorch on the leaves of the wheat crop. I am on board with the theory that using a foliar application is a more efficient way of utilising nitrogen. I also believe that reducing nitrogen can help to eliminate the loss of soil organic matter and lead to more healthy plants that will require less fungicide. Therefore, it is with great excitement that I can report that I made my own foliar nitrogen, applied it at (hopefully) the correct rate and there has been no scorch to the leaves. In addition, Joel Williams taught us that applying the sap amendment with the foliar nitrogen application is not detrimental, but can be beneficial, and so we did this too, saving a pass with the sprayer to boot.

Applying foliar nitrogen is best done early in the morning to gain the best crop take up and to avoid scorch, However, having been advised to include a shedload of biologicals, such as fish hydrolysate, carbon molasses from QLF Terra Fed, and fulvic acid, it seemed to me that it would be advantageous to pre-mix the biologicals when making the nitrogen. However, when I asked Joel, he advised against it. Regardless, I still wanted to save precious time for Carl, who starts so early in the morning, to apply the foliar nitrogen. Eventually, because of a delivery of lumpy fish hydrolysate that required some prefiltering, we ended up premixing and filtering all the biologicals together into one IBC. This gave Carl, less stress and more time on the day of application, vastly improving the operational efficiency for those early morning starts.

I have carried out two carbon calculators this year: the Agrecalc in conjunction with the Climate Demonstration Farms and a Carbon Calculator Toolkit in conjunction with the Environmental Farmers Group. The Agicalc deduced that I was emitting a little carbon, whereas the Toolkit deduced that I was sequestering a little carbon. So I would like to deduce that I am in the middle and most likely carbon neutral. I heard that the Soil Association Exchange were offering a financial incentive per tonne to producers with a low carbon footprint. To me, this concept is superior to selling carbon credits and locking into a five or ten-year period. Overall, farmers prefer flexibility over being committed to long-term agreements. I have no problem with receiving a tonnage payment to enable someone in my supply chain to offset some of their carbon footprint, . However, the payment needs to be fair, and representative of the hurdles farmers must jump through to get to carbon neutral or sequestering carbon. On a simplistic basis, we have had to go through the learning curve of direct drilling, which reduces carbon loss through reducing soil movement, We have also had to learn how to reduce nitrogen applications without reducing margins, knowing that excess nitrogen fertiliser also erodes soil organic matter. On average, our soil organic matter levels have grown at 0.18% per year, which supports the results of the carbon calculators.

On the back of being a Climate Demonstration Farm, we have a planned farm visit in conjunction with Colin Chappell, and I have been asked to sit on a panel at Groundswell. I have also been asked by Regen Ben to provide an eight minute talk on the ups and downs of our farm diversification. Compressing 25 years of experience into eight minutes is quite a big ask.

On the livestock front, we ended up buying an Easycare ram which was put to a nucleus herd within our flock, I know that the ewes are all Romney X Lleyn, however I was rather looking forward to seeing some lambs with an element of wool-shredding traits. So far, they all look the same to me!

As mentioned in my last article, both of my daughters are getting married this summer, so I want it to rain but I don't want it to rain.

5 REASONS TO VISIT THE AGROFORESTRY SHOW 10-11 SEPTEMBER 2025

Discover how trees can boost your regenerative farming system at Woodoaks Farm, Hertfordshire.

Following its sell-out debut in 2023, the **Agroforestry Show** is back—bigger, bolder, and packed with even more inspiration and learning opportunities. Join us for two incredible days dedicated to the future of farming, forestry, and sustainable land management.

Agroforestry is the deliberate integration of trees and shrubs into farming systems. It's an increasingly important land management practice that should be part of every regenerative farmer's toolbox, with enormous benefits for business, nature and climate.

1. Boost your farm's resilience in the face of extreme weather

You'll know from first-hand experience that farmers are feeling the effects of climate change. In the last six years alone, we've had four of the UK's five hottest days since records began in 1911. Temperatures exceeded 40oC in July 2022. From October 2022, England had the wettest 18-month period ever recorded, with the Environment Agency logging 1,695.9mm of rainfall.

Agroforestry brings resilience and diversity into farming systems, enabling them to adapt to extreme heat, drought or wet. Well-designed and managed agroforestry systems will maintain normal microclimatic ranges for your crops and livestock. They will provide vital shade and shelter and actively restore the essential components of a healthy ecosystem: soil health, water quality and biodiversity.

At the show, join discussions on how agroforestry can help add resilience to your business at a landscape scale, including with Claire Whittle, farm vet and farmer. She'll take a fascinating look at how your farm might look and function in 2050 based on meteorological predictions both with and without trees.

Andy Dibben, head grower at Abbey Home Farm, Cirencester will also be speaking at the show about his own experiences. He states: "We've integrated trees into all of our cropping areas, at glasshouse, market garden and field scale. We see them as a powerful tool for improving existing horticultural production, as well as an effective technique for building in resilience to climate change."

2. Tackle uncertainty around grants and trade

Numerous external factors both within the UK and from a global perspective are creating great uncertainty for farming. Agroforestry isn't a magic bullet, but it can spread the risk and help farming businesses to diversify, offering an opportunity to develop new enterprises and enter new markets like fruit, nuts

and timber. Alternative funding sources are also available in the emerging natural capital markets for establishing new trees and woods and restoring existing ones, such as Biodiversity Net Gain (BNG) and carbon.

At the show, you can explore the potential for your business with sessions on markets for tree-based products, innovative sources of finance and the carbon impact of agroforestry.

You can also hear Stephen Briggs, perhaps the UK's highest profile agroforester, in conversation with farmer and commentator Will Evans. They'll discuss the success of Stephen's 24m wide apple and cereal-based alley cropping system, established in 2009 on peat and clay soils, with results including:

- decreased soil erosion
- enhanced productivity with an average Land Equivalent Ratio of 1.25
- reduced risk through growing annual and perennial crops alongside each other
- circa 4t C sequestered per hectare
- improved biodiversity.

3. See first-hand a farm transitioning to a regenerative system

Woodoaks Farm is the perfect venue for the event, showcasing the early stages of a farm transitioning from a conventional arable farm into a mixed regenerative farming system. It demonstrates how trees and woods are helping this process, including the first foray into agroforestry and how to bring existing farm woodland into management. The long-term farm tenant is on this journey with the farm and several new business units are being established too, including a flower grower, brewer, and market gardener.

Don't miss the farm walks to see the newly planted shelterbelt, initial woodland restoration and agroforestry alley planting in practice. The tours will share the farm's plans to create a Biodiversity Net Gain habitat bank and visit the newly established businesses on site.

4. Gain the advice and confidence to take the next step

Whatever your experience and knowledge so far, the show offers everything you need to move forward on your agroforestry journey.

Many of us learn best from our peers and we'll have plenty of inspiring speakers and in-depth discussions sharing real experiences of what has worked well and what hasn't. See live demonstrations of tree management and establishment, check out the latest in tree protection options and speak to a range of tree nurseries. Get involved in hands-on workshops and small expert-led sessions at the Training Hub. Try out online planning tools and take advantage of a free 45-minute design clinic with an expert adviser to discuss plans for your farm – just bring a map of your site.

5. A great day out!

The show will be full of unmissable networking opportunities and chance to get away from the farm and relax while learning. Take a visit to the speaker's corner or take a break with local food and an agroforestry beer brewed on site. Enjoy musical entertainment in the evening and camping and facilities are available too. Don't just take our word for it!

"A positive day, and brilliant to see so many farmers in attendance looking at ways they can integrate trees into their businesses. Looking forward to next year's event already.' Will Evans, Welsh Farmer and Chair of Oxford Farming Conference

"Great day at the first #agroforestry show with lots of really great talks from farmers. Well done @SoilAssociation @WoodlandTrust and everyone involved in organising this event." Martin Lines, farmer and CEO of the Nature Friendly Farming Network.

Get your tickets now at **www.agroforestryshow.com**

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FINDING THE PERFECT **REGEN WHEAT** VARIETY

What are the key characteristics of the perfect wheat variety for a regenerative system?

For most growers, yield is often the first and most important data point to look at when judging which wheat variety to grow, along with end market suitability.

In a regenerative system yield, while still important, is perhaps no longer the top priority, with a combination of other characteristics rising in significance.

Top of the list for Wildfarmed head of farming Ed Brown is disease resistance. "I'm definitely looking for a variety with good all-round disease resistance, in particular, septoria." he says.

"AHDB resistance scores for septoria are generally reliable, while for yellow rust, they're largely unreliable because

Wildfarmed head of farming Ed Brown

yellow rust strains change. A variety might start with a nine, but the following year might fall because a new strain has developed.

"So I'm looking for a clean septoria score and obviously not a known weakness on rust."

Those using a regenerative system to lower, or use an "appropriate" amount of applied nitrogen, as Ed terms it, should also benefit from lower disease pressure. "If you are using an appropriate nitrogen rate and choose a clean variety, you're putting in place the ability to reduce fungicide inputs if the weather allows."

Continuing with traits that potentially

BDV line vs non-BDV line under extreme pressure

allow reduced inputs, a vigorous variety is also high on Ed's list of characteristics he looks for. "From a weed perspective, you're looking for something quick out of the blocks both in autumn and again after winter to give some weed competition from the crop."

Next is a variety that can offer a premium. "Clearly with my Wildfarmed hat on, we want a variety that will achieve the desired milling protein. But actually, within the wider concept of regenerative agriculture, particularly currently with where the wheat price is, I think we need to grow things that allow access to premium markets where we can," Ed says.

Varieties that negate the need for insecticides are another positive, he notes. "Growers are beginning to avoid using insecticides because morally they don't want to. We've had BYDV-resistant varieties available for a couple of years, but so far, they have come with quite a heavy trade off in terms of yield and disease resistance.

"But some of the newer varieties with BYDV resistance traits are genuinely ones that you would like to grow not just for that trait," he says. "This reduces the worries when drilling in September, if you're in a no-insecticide system."

Of the commercially available varieties with BYDV resistance traits, there is still a yield drag, although those in variety trials are closing that gap rapidly.

Yield still matters, Ed says, but maybe not quite as much in regen system. "If you are in a high input system you need yield for profitability. In a regen system, if your fixed and variable costs are lower, you can afford slightly lower yields for the same or better margin," he says.

Bartholomews technical director, Andrew Stilwell

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BYDV 1

BYDV 2

BYDV 3

"But yield is still a massive component of margin, so it is not a case of foregoing altogether."

In commercial situations, Ed says yield differences shown by Recommended List trials are often not seen to the same extent. "If the trade-off of growing a variety is a lower yield on the Recommended List, I wouldn't worry about it. Even if you believe them, the difference between the best and worst is typically only a few percent, and yield is so subjective to the field, farm and season and everything else just makes a subtle difference."

Disease resistance is the first thing Bartholomews technical director, Andrew Stilwell looks for in a wheat variety when advising clients in regen systems. Unlike Ed, he sees rust as a slight priority, with some cover crop species used more widely in such system and problem weeds, such as groundsel, acting as a bridge for rust.

"But decent septoria resistance is always a bonus as you can never discount it from your thought process."

Varieties that attract premiums or can add value are more important than out-and-out yield, Andrew suggests, with lower-yielding types potentially some help in reaching quality specs. "It often means you can guarantee better levels of protein, which is very valuable when adding every little bit of margin to your crops is vital."

One variety Andrew is considering for regen systems is RGT Goldfinch, which fits many of the criteria he and Ed are looking for in a variety.

"For a long time, the majority of growers I work with have wanted to minimise the amount of insecticide they're using on farm," Andrew notes. "That was outside and before the no insecticide options became available in the Sustainable Farming Incentive.

"So immediately, the BYDV tolerance of Goldfinch makes it attractive to a lot of growers.

"While that might be a primary driver, when we looked at its other characteristics, we could see it fitted well."

A Group 2 miller with excellent bread-making quality, it has a very good disease resistance package, with nines for both rusts, seven for septoria and seven for mildew on top of its orange wheat blossom midge and BYDV resistance traits.

Goldfinch's one potential weakness is standing power, scoring only a three without growth regulation. It does respond well to the use of a growth regulator, with the score improving to a seven, bringing it more or less in line with most other milling wheat varieties.

"Standing power is lower on the list of key characteristics I look for," Andrew says. "We can manage lower standing scores quite comfortably and economically with our existing array of growth regulators."

The robust disease package should bring more flexibility with fungicide inputs, Andrew suggests. "Don't automatically assume reductions because we know that even with high ratings that doesn't mean a variety won't get a particular disease.

"But these traits do bring more flexibility around timing, and when the season dictates, potentially reductions in fungicides.

The other thing that has been evident with Goldfinch in trials is its performance consistency, he says. "We've had three very different seasons in terms of weather, and it's come through them all very well."

He also believes that yield performance can be improved. "Some of the work we are doing with the variety is around crop nutrition, and where we've supplemented nitrogen with additional sulphur, magnesium and potassium we have seen above average yields from Goldfinch.

"I think that's down to its root structure," he says. "It's a slower developing variety in the autumn than some, which means it can be drilled earlier, giving more time to develop its root system to accumulate the nutrition."

The Agroforestry Show

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Woodoaks Farm, Hertfordshire

Following its sell-out debut in 2023, the Agroforestry Show is back!

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SOIL FARMER OF THE YEAR 2025 ANNOUNCED AT GROUNDSWELL

Three farmers championing soil health and regenerative practices have been recognised in the 2025 Soil Farmer of the Year competition, with the awards ceremony taking place at this year's Groundswell event.

The competition, jointly run by Farm Carbon Toolkit and Innovation for Agriculture, and proudly sponsored by Cotswold Seeds and Hutchinsons, celebrates farmers across the UK who are leading the way in managing soil as a vital, living resource.

First place was awarded to John Joseph, who manages 100 hectares of sandy loam soils at Trecorras Farm in Herefordshire.

John Joseph, first place winner

Over the past decade, John has reshaped how soils are understood and managed on his farm. Key management practices now include widespread use of companion crops, a seven year rotation which has incorporated grassland into the arable system, 100% direct drilling and reduced inputs.

Competition judge Jade Prince, soil specialist at Hutchinsons, praised John's "clarity of purpose and scalability."

"Every decision on John's farm has a clear agronomic and economic rationale," she said. "What stood out was his ability to link soil management to business viability, showing that good soil makes good business sense."

Second place went to Jonathan Hodgson, who farms 285 hectares

Jonathan Hodgson, second place winner

of clay soils at Great Newsome Farm in East Yorkshire. His system centres on strip tillage, companion cropping, cover crops, and integrated livestock, alongside the elimination of seed dressings and insecticides.

"Jonathan's approach to enterprise stacking was particularly inspiring," said Ms Prince. "From growing barley for his own distillery to producing dual-purpose flax and grazing sheep on cover crops, he is building diversity and resilience into both soil and business."

Third place was awarded to Andrew Mahon, who manages 800 hectares of Hanslope clay across Bedfordshire.

Andrew Mahon, third place winner

Since 2015, Andrew has shifted to a predominantly direct drill system, with shallow discing being used to establish small seeds. He is now focused on addressing localised compaction and increasing biological activity through targeted interventions.

Deborah Crossan, Head of Soils and Natural Resources at Innovation for Agriculture, highlighted Andrew's work with biological inputs.

"Andrew is pioneering on-farm applications of Johnson-Su compost extract and biological feed at drilling. His attention to soil biology and microbial support is not just progressive, it's proving highly effective in driving organic matter gains and establishment success."

Following the awards, each of the three winning farmers will host on-farm events to share their soil management strategies in action. These farm walks will offer valuable insights for fellow farmers looking to build soil resilience and cut input reliance.

"Seeing these systems on the ground is invaluable," said Ms Crossan. "They demonstrate how different soil types, farming systems and business models can all benefit from a soil-first approach."

Details on the farm walks will be announced via the Farm Carbon Toolkit and Innovation for Agriculture websites, newsletters and social media channels in the coming weeks.

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REBOOT FOR **CSFB MANAGEMENT**

The strongest set of cabbage stem flea beetle (CSFB) management strategies to date has been released to help reverse the fortunes of oilseed rape (OSR). Jason Pole, AHDB Technical Content Manager, explains.

We have seen large year-on-year reductions in the OSR area over the last decade. For harvest 2025, the AHDB Planting and Variety Survey estimates just 0.24 million hectares in the ground – the smallest GB area since 1983 and well below the record 0.74 million hectares planted in 2012.

The withdrawal of neonicotinoid seed treatments exposed the crop to previously masked risks, which dramatically increased feeding damage from CSFB (from the adult and larval stages). It has chipped away at confidence and commitment to the crop. Because of OSR's unique properties as a rotational break crop and the good market opportunities for oilseeds that make it safely to store, the pest is a major source of frustration.

Last year, United Oilseeds established an industry group to halt the area decline and put it in reverse. They established the OSR Reboot initiative (unitedoilseeds.co.uk/osr-reboot) to examine the evidence, cut through the noise and present the facts to help UK farmers grow profitable OSR crops.

The group sifted a mountain of research and distilled down the findings into a top ten list of management strategies, which were published on the AHDB website in June. Although not the first attempt at drafting a list of integrated pest management (IPM) options for CSFB, it is the newest and most comprehensive. The web-based strategies also address the nuances behind each strategy because, as usual, the details count.

Adult cabbage stem flea beetle (Image credit Dewar Crop Protection Ltd

Cabbage stem flea beetle in volunteer oilseed rape (image credit Caroline Nicholls, AHDB)

Moisture matters

Decreasing damage during the crop's critical early growth stages is at the heart of many of the strategies, which requires careful planning ahead of drilling. But any plan can be thrown out of the tractor cab window, if one critical detail is overlooked – soil moisture.

When moisture is lacking, rape seed germination becomes more variable (especially in mixed-quality seed batches) and emergence slows. It increases the odds of the pest consuming leaf material faster than it is produced, which is unlikely to end well.

The strategies reflect on the minimum moisture requirements for specific sites and situations. However, putting the details and the science aside, when your gut says it is too dry to drill (and no rain is forecast), it probably is.

Of course, the usual management tricks to conserve soil moisture apply, such as lower-disturbance establishment methods and rolling (where possible roll again at 90 degrees to the drill to conserve moisture and improve seed-to-soil contact).

Top ten CSFB management strategies

The evidenced-based strategies cover a lot of ground, but they can be summarised as follows:

1. Ditch the date: do not stick to traditional calendar dates – sow early or late to avoid the peak migration period
2. Chase perfection at establishment: always wait for adequate moisture (present or forecast) before sowing, use the best seed, promote good seed-to-soil contact, ensure adequate nutrition and select varieties with appropriate vigour for the sow date
3. Keep your distance: any distance (space and time) between previous and current crops will improve the chance of success
4. Improve larval tolerance: fewer, bigger plants will stand up better to larval attack
5. Make use of muck: apply organic materials, which can reduce beetle damage and support crop growth
6. Park the pyrethroids: resistance is real and sprays can harm beneficial insects
7. Create companions: companion cropping (e.g. with oats, buckwheat and berseem clover) and intercropping (e.g. with faba beans) can help shield crops from CSFB

8. Build brassica buddies: use sacrificial strips of brassica (e.g. turnip rape) or OSR volunteer trap crops to lure beetles away
9. Stir it up post-harvest: lightly cultivate OSR stubble soon after harvest to hit emerging CSFB
10. Unlock hidden gems: discover the many other tactics to layer in an integrated approach to suppress the pest

Migration madness

Beyond moisture, one of the main CSFB management lessons has been the need to avoid traditional sowing dates. Over the last decade, AHDB and others have monitored when beetles migrate to feeding grounds, revealing clear patterns. Peak migration usually occurs around late-August to mid-September. Providing soil moisture is adequate, this offers two management options:

- Sow early (early- to mid-August) to get crops up and away before adults arrive in bulk
- Sow late (mid-September onwards) after migration has peaked

As later-sown crops are also associated with lower larvae numbers, it provides a tempting window of opportunity. It reduces other risks too, such as some diseases (e.g. clubroot) and pests (e.g. turnip sawfly and cabbage root fly). However, the later you sow, the more likely you are to benefit from a variety with good autumn vigour – to get the crop to the four-true-leaf stage quicker, so it can stand up to late beetle stragglers as migration ends.

Cabbage stem flea beetle larval damage on OSR 3

The web page provides tips on how to monitor for adults and larvae, as well as spray thresholds and information on insecticide-resistance status to determine if treatment is appropriate. As CSFB has developed resistance to pyrethroid insecticides to various degrees, it is essential to target and avoid sprays as much as possible (especially in England).

Trap tactics

Everyone has been on a steep learning curve, with several new management techniques developed that target weaknesses in CSFB's life cycle. The 'build brassica buddies' strategy is a great example, where non-cash-crop brassicas are used to lure in and trap beetles during migration. There are three main ways to achieve the effect:

- Leave OSR volunteers until at least late September
- Establish border and in-field strips of turnip rape
- Sow late-summer brassica cover crop species

It is important to destroy all brassica trap crops before the end of February (to reduce the risk of fuelling the next generation of beetles).

Evidence base

The neonicotinoid case provides a valuable lesson for strategic research. Seed treatments provided adequate protection and there was little urgency to understand the pest's life cycle. When this effective crop protection option went, research scrambled to catch up.

Since 2012, AHDB has funded several projects to identify chinks in the pest's armour that can be exploited, which underpinned the development of the management strategies. This autumn, the next project will get underway. Running for the next five years, it will:

1. Test novel treatments (such as insecticides, biopesticides and synergists)
2. Advance cultural control strategies
3. Generate data to underpin decision support systems
4. Understand and encourage natural enemies of CSFB
5. Create space for new innovations

It is another fantastic example of the industry pulling together to make a real difference. The project group includes AHDB, farmer cooperatives, input specialists, grain merchants and food producers. AHDB will adapt the management strategies in response to new sources of robust evidence arising from research activities.

You can access the management strategies at **ahdb.org.uk/csfb-tips**

Partners

The management strategies have been identified and endorsed by a wide range of partner organisations.

- The Agriculture and Horticulture Development Board (AHDB)
- Agricultural Industries Confederation (AIC)
- Agrii
- Agrovista
- Association of Independent Crop Consultants (AICC)
- BASF
- BASIS
- Bayer CropScience
- BSPB
- Ceres Research
- Corteva Agriscience
- Frontier Agriculture
- Grainseed
- Hutchinsons
- KWS UK
- Limagrain
- The National Farmers' Union (NFU)
- NPZ UK
- Openfield
- Phoenix Group
- ProCam
- Premium Crops
- Seed Crushers & Oil Processors Association (SCOPA)
- United Oilseeds

Jason Pole, AHDB Technical Content Manager

FARMER FOCUS TOM SEWELL

Since last harvest:

- Oats bales
- Rain
- Budget and consequences
- Our values
- Winter
- Concrete and tanks
- Poor prices
- From wet to four very dry months
- Reunion and cereals
- Purchase of a bowser
- Where we are today
- Harvest planning
- Future outlook, basics good lime compost balance soil indices
- Do less better! Assess priorities, given past week and budget.
- Other non-farming opportunities

It's been almost a year since I wrote an article for Direct Driller magazine. A lot has happened since the end of last harvest and I had to re-read it to see just how much has changed in that time!

As with most farmers, my life seems to be dictated by the extreme weather patterns which have become the norm in recent years.

On September 21st of last year the Weald of Kent Ploughing Match was held near Pluckley. The weather was delightful, the sun shone and dust blew around the carpark. The ploughs seemed to do their thing and all was good! That evening the heavens opened and pretty much for the next four weeks we watched it rain!

The day of the ploughing match was also the day that my wet oat straw was baled! Having cleared all the bales off the fields and lined them up in rows on the headlands ready to cut the strings and turn them into compost, I happened on a big slice of opportunity!! What I discovered (with a bit of help and advice from Guy Eckley) was that these heavy damp bales of straw could be built into a bund suitable for storing muck!

This muck was spread onto the growing crop of wheat this spring and now I have a pile of bales covered in chicken muck, which should make fabulous compost once someone volunteers to cut the strings for me!

I normally aim to be drilled and sprayed up, with all the machinery washed, oiled and away by the October half-term. It's normally a good incentive and with four children, of whom three were school age last October, my wife had booked a holiday. Well, the half-term came and went, and we had yet to plant a seed! I returned home from a week in Turkey with a fair lump of drilling to do. Happily, it actually dried up enough to get the wheat and beans planted. That's where having two stupidly big drills comes into its own!

Once we had finished drilling it rained for what felt like three months. December through to the end of February was wet and although the crops established, they didn't tiller well before winter set in.

The other thing that came out of the blue last autumn was the Chancellors budget! Never in my lifetime has one event single-handedly knocked the stuffing out of every farmer I know. I found myself walking out to the

The old kit will have to stay

Drilling wheat 12th November

yard and looking around wondering "What's the point?" I did spend a lot of my time over the winter phoning farming friends and all were feeling the same way. The incentive to invest, build, grow and expand had gone in one afternoon! I take some consolation in the fact that we only own about 4% of the land that we farm but it doesn't take much machinery, a yard and a house to get the valuation over the Chancellors threshold.

The effects of the budget meant I looked afresh at everything we do. On the back of harvest '24, where yields were down across the country, I expected market prices to rise. What actually happened was that the UK millers committed to import German wheat to make up the shortfall and the price just drifted as the marketing year progressed. The combination of these two factors and the current machinery price inflation has meant that we have not considered (or purchased) any new machinery over the last year. The only thing that did arrive was a second-hand diesel bowser. The two 45-gallon barrels, which were strapped in the back of the truck, probably aren't in keeping with current regulations!

Rainwater tanks

One thing we have done over the last year is complete the Countryside Stewardship capital works, which were part of an agreement that started last year. This involved concreting our farmyard and installing 200,000 litre rainwater harvesting tanks. Most of January was spent digging up the old yard, crushing stone, installing drains and laying concrete. Then came the delivery and installation of eight 25,000 litre tanks, which, once filled, should make us completely self-sufficient in water for spraying. At least if farming is tough, we have a good yard, sheds and water, which in the future I see as an increasingly valuable asset.

At the end of February it stopped raining and we've hardly had any since! I can't remember a spring period where you could get your entire weekly workload done comfortably and have the weekend off. This is good because we support Maidstone Utd and have been able to follow them for almost all their matches this spring!

Sitting here now on the 24th of June, the crops actually look better than they should. Don't get me wrong, they're not going to break any records, but they have steadily improved through the growing season. The liquid fertiliser was all applied, in good conditions over three splits. We only used fungicides (at reduced rates) on two occasions, which were a T1 timing, then somewhere between T2 and T3. We have used foliar applications of trace elements (mainly potassium and magnesium plus early phosphorous), which has noticeably kept crops clean and healthy. I have just returned from a pre-harvest break in North Norfolk with my wife. It was stunning! Big fields, a wide variation of crops, quiet rolling country roads and Holkham Beach, one of the most beautiful places to walk! If anyone there fancies swapping places for a farm in mid Kent let me know!

We will continue our collaboration with Guy Eckley for this harvest and autumn. We continue to own all of our own machinery but have an agreement to cooperate, which suits both family businesses. Between us we have two 12m drills (one disc and one tine), two tracked rotary combines and far too many tractors, trailers and telehandlers! We have three to four extra seasonal staff that join us, as well as both of our wives who make sure we're all fed and watered!

After harvest this summer, we have a chunk of compost to spread and some remedial subsoiling to carry out with our Sumo LDS. We are planning on using this before planting winter beans and also where remedial work is required. In accordance with the SFI regulations, we have soil-tested the whole farm using a grid system, which has resulted in us needing to apply a lot of lime this autumn. We will sell the wheat straw in the swath pre-beans to help the cash flow for this. I was lucky in buying my fertiliser before the price was withdrawn but having to pay for fert and lime in quick succession will give the bank account a kicking!

The recent events in the Middle East come as a reminder of the priorities we place on things! This, combined with the current governments treatment of the farming sector, is leading me to question my farming and non-farming priorities on a daily basis. A recent Worshipful Company of Farmers reunion in Oxfordshire/Gloucestershire was an excellent reminder of why we should stop and get off the farm a bit more. We completed the course in 2008 but the friendships within the group are as strong as ever, with group members from Germany and Tasmania attending this year.

Can I take this opportunity to wish you all a very safe and breakdown-free harvest!

Last week, I attended the funeral of a very close farming friend who passed away at the age of 57. It was a stark reminder of the frailty of life and how much we take for granted.

Phil Broad will leave a very big hole in the local farming community. He will be dearly missed. RIP Phil!

Concrete yard before

Concrete yard mid construction

Nearly there...

Finished!

GROWING FLAVOUR

JAMIE STOKES – 2024 NUFFIELD FARMING SCHOLAR

Jamie Stokes

Getting an invite to write about what I have learnt from the last 18 months travelling for my Nuffield Scholarship is always welcome. I am a farmer from Cambridgeshire, running my family's 1000ha 'high-input, high-output' arable farm, where we grow both target site and enhanced metabolism resistant blackgrass. This year we have decided to diversify into herbicide resistant ryegrass, because farming isn't complicated enough. My Nuffield study topic is 'Learning from the small, to teach the big' and I went searching for a new way of looking at the problem of food production and came back wanting to talk about growing flavour.

Flavour is a concept that I had not considered transferable to arable farming. At home we choose a variety based on what the millers want, and they are usually after varieties that are consistent in traits such as Hagberg Falling Number and Protein content. Taste isn't on the recommended list. But I was in a bakery in Detroit asking questions about what they do when the baker insisted that I drive two hours north to visit a supplier of theirs, Randy Hamilton of Hamilton Organic Farms. "Oh my god, his cornmeal is amazing. Like the most flavour you can find." I wasn't sure if this was American hyperbole at the time, but all the other customers in the shop quickly agreed, the food baked with Randy's cornmeal just tasted better. It's why they were all there.

The corn Randy was growing would be called a heritage variety in the UK, but I feel that this is doing him and his crop a disservice. Randy has been hand-selecting the best

Hamilton Orgainc Farms Hand Selected Corn- image credit - Jamie Stokes

Jamie Stokes and Shigeo San

Randy Hamilton of Hamilton Organic Farms - image credit - Jamie Stokes

corn cobs from his naturally pollinated field for the last 20 or so years. Creating a variety that is as unique as he is. This is then treated with a blend of molasses and other organic feeds during its growing season and milled in Randy's own on-farm mill.

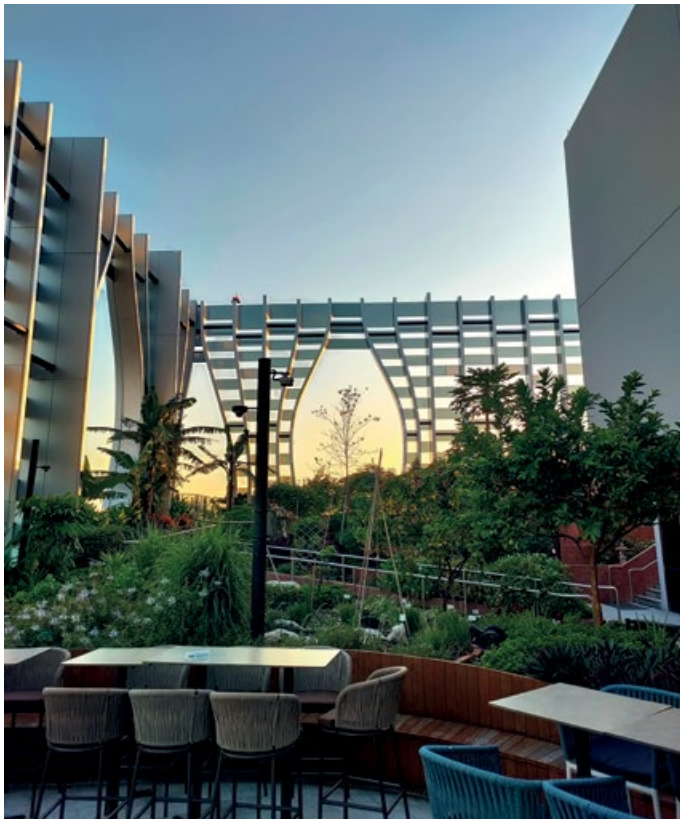
Randy hadn't set out to grow the best tasting corn, his original goal was 'nutrient dense food', but flavour was what he had become famous for. Why are we not talking to the bakers about how we can add more flavour into what they produce? Randy's corn is labour intensive and low yielding, but profitable because it is in such high demand. Single-origin high-flavour grains. This approach has been so in demand that Randy has been asked to set up a new small batch mill within the Eastern Market in Detroit so that other small producers can start to bring new flours, and new flavours, to the market.

Growing flavour as a concept is something that I started to see repeated around the world. One of the best examples happened to be at the highest urban farm in the world: the Urban Food Forest 280 meters up on the 51st floor of the 1-Arden skyscraper in Singapore. The concept was to have a farm-to-table restaurant within the skyscraper, but the hectare of growing area is not enough space to actually grow all the produce consumed in the three restaurants below.

Shigeo San's Flour - image credit - Jamie Stokes

Instead, they chose to companion crop around 150 different herbs and spices with fruit trees and some vegetable plants. These plants are chosen in a collaborative effort between the chefs and the farm team so that the flavour of the dishes served in the restaurants is actually grown in the skyscraper, not the calories. The Food Forest is also open to members of the public who eat in the restaurant, enabling engagement with where the flavours they experience come from.

Whilst trying to make sense of how growing grains for flavour might work in the UK I headed to the pub, where all good thinking happens. Specifically, I was at the Goodlot brewery in Ontario, Canada and written above the bar was "This beer can only taste like this, because it was made here". It took two pints before it clicked that what they were talking about was terroir, which all wine lovers know is the all-encompassing word for the environment in which a particular wine is produced. Wine growers talk about terroir with such reverie, how only their soil, on their hill with its own microclimate can produce such a flavour. Well, if a beer can also have terroir and Randy's corn arguably does, does wheat?



The Urban Food Forest- image credit - Jamie Stokes

The answer to that takes us all the way to Japan to speak to Shigeo-san, a man famous for popcorn. I flew north from Tokyo to the island of Hokkaido to learn about Japan's only microwave popcorn business. Originally an idea to keep his staff employed whilst the ground on his farm is frozen over the winter (up to a meter deep usually!), all of his corn is now packaged and sent around the world from a state-of-the-art factory that no longer employs the farm team. But in the corner of his distribution facility was something a little more familiar, flour packaged up in one and ten kilogram bags.

Goodlot Beer- image credit - Jamie Stokes

He grows four different wheat varieties on his farm; Kitahonami, Harukirari, Kitanokarori and Haruyokoi, and has them milled individually. Currently 60% of his flour is sold on the wholesale market by traders, a similar process to selling grains in the UK. The remainder is packaged up as individual-variety single-origin flour, most going direct to bakers but currently around 10% of his flour is sold to the public through his website.

Japan is a nation that is very proud of its produce, and perfection in both look and taste is almost worshiped. Shigeo-san has tapped into a market where being able to say exactly where the produce has come from is a bonus, but getting a unique flavour profile and elevating your baked goods is the goal. Having started out small, this market in Japan is growing, with increasing numbers of bakers wanting his single-origin flour. With the knock-on effect of at home bakers wanting more and more of it to replicate what they buy at home.

Can we replicate this back in the UK? I would love to walk into a local bakery and see the farmhouse loaf made with Cambridgeshire Skyfall for taste and the cob used Zyatt from Yorkshire because it makes a better crust, but I have my suspicions that the buying public aren't ready for that yet. They are still buying strawberries in December when they taste of precisely nothing.

NEW **AGRII TRIALS** PUT THE FOCUS ON DRILLING AND CULTIVATION CHOICES TO **MANAGE BLACKGRASS EFFICIENTLY**

A comprehensive Agrii trial focusing on different combinations of drilling date, cultivation technique and drill options is delivering vital insight into the best management strategies for achieving the most effective blackgrass control while encouraging strongly early crop growth.

Delaying drilling to give the best options for blackgrass control or simply because of challenging autumn conditions is having a bigger effect on crop establishment and subsequent plant health than many realise, says Agrii agronomist Jamie Lyttle.

Fieldscale trials being carried out by him and Agrii area business manager Greg Taylor near Brackley, Northamptonshire, are exploring the benefits of a ploughing reset in direct drill systems and also the use of cultivations to force an early flush of weeds.

"It all came about when we were walking some spring bean crops a few years ago," Jamie explains. "We were very concerned about the level of black grass germination taking place and why this was occurring following the adoption of a new drill.

"This was also very much against the backdrop of the last three to four years' weather and its effect on cultivations and drilling. Whereas before we would always have said growers should be prioritising delayed drilling, we now believe a more flexible mindset is required.

"We seem to be increasingly coming out of the winter with late drilled crops that are very much under stress and really not in a position to grow well the following spring and are increasing susceptible to disease and pest attack.

"We've looked at drilling dates ranging from 15th September to 22nd November and can see the earlier drilling plots are especially clean where we have carried out a 'ploughing reset' but without this they quickly get out of control with regard to blackgrass.

"As we move into the later drilling timings, we see crops getting cleaner, even when direct drilled, but they are much further behind. So, you have cleaner crops but ones that are under pressure from day one."

Forcing the flush

According to Greg Taylor, the trials have also been looking at the practicalities and benefits of forcing a flush of blackgrass earlier in the autumn in a direct drill scenario where they would naturally come too late if left alone.

"The idea is that if you can get an earlier flush, get it out of the way quicker, you can then move on to getting a successful, earlier drilled crop but with less blackgrass problems resulting.

Tusmore BG trials 1

Tusmore BG trials 2

Jamie Lyttle (left) and Tusmore Park Farms manager Tim Hall

"What we have found is that if you can get that flush, you can then go drilling with minimum disturbance.

"We're not doing true direct drilling at that point because we've already been through with some sort of cultivation, even though it could have been incredibly light.

"But we have effectively used the flush to then be able to use the direct drill as a minimum disturbance tool at the point of drilling and some of those plots were incredibly successful in having the least amount of blackgrass."

Significant insights

The trials are going to provide significant insight and knowledge around keeping blackgrass under control without reducing the ability of the crop to thrive subsequently, he believes.

"That's an incredibly important aim for all Agrii customers. We've hit the reset button in some cases and done a lot of ploughing, but there's only so many times you can do that before you start bringing up last year's blackgrass. It's all about that zero seed return policy.

"So, we have to look at all the options and put the points of the sequence together as best we can and see how we can manage the processes better. For example, how do we change a drill and ensure we manage the the system around it to best effect?

"Or should we change the system but keep the same drill. Do we need to invest in a drill that could costs a hundred thousand pounds or do we stick with what we already have and just do things better?"

Jamie Lyttle points out that the first trial last year focused on four drills, but things have grown significantly since then.

"We've now gone to eight drills, six different cultivation techniques, three drill timings and three separate seed rates and we're starting to see some truly thought provoking results. It's going to be really interesting after harvest when we can process all the data."

FARMER FOCUS
PHILIP BRADSHAW

It doesn't seem possible, but it is 10 months since my last article. At that point, I was concerned whether our late-summer drilled pollen and nectar mixes would be good enough for the year ahead — and indeed, while some were good, a few areas unfortunately looked poor.

In late October, I drilled the winter wheat, mostly Skyfall and o1 field of Extase. I should have been more patient, as some of it was drilled in conditions that were probably too wet. With the following dry period, it would have gone in better a week after I finished!

The trailed Weaving GD drill again did a superb job of planting in challenging conditions, and it emerged well, with just a few blocked coulter issues in one field that barely show now. In fact, all the wheat came through winter looking very good.

In the spring, we took the view that some areas of the pollen and nectar mix were not good enough. They also had some annoying blackgrass, so I took the opportunity to spray them off and then redrilled.

Our 2023 SFI agreement continues to give agronomic gains with opportunities

The GD drill ready to go with front and side tanks for liquid fertiliser amendments

to clean tricky areas of blackgrass ahead of spring sown options, six metre grass strips to ease LERAPs, and excellent first wheat after a year or two of multi-species pollinator mix 'break crops'.

This is all alongside the huge environmental outcomes. The multi-species crops are a joy to see, with all sizes of wildlife enjoying them. I am, however, slightly concerned that our increased area of winter bird food crops could lead to an obesity crisis among our local wild bird population!

The wheat came into spring looking well and raced through the growth stages. However, some lighter areas of land are now showing drought stress and yield potential must be affected to an extent. It is pleasing that we have almost no blackgrass showing, making this year one of the easiest for hand-roguingg.

I am very pleased with our refined system that works well after nine years of no-till establishment. The occasional soil loosening has proved essential, as has reconsolidation afterwards. The drills both have liquid fertiliser kits which allow us to apply some amendments to the soil, including manganese which seems to have significantly reduced our requirement for foliar applied manganese in early spring.

We haven't applied any lime, phosphate or potash fertilisers for nine years, but recent soil analysis still shows excellent indices. This is pleasing as I was concerned that we might be mining nutrients. We may be doing that very slowly, but the system we have seems

Drilling wheat into a self sown mustard 'catch crop'

Low Disturbance subsoiler in a catch crop between wheats

Agriculture Ministry visitors from Bangladesh to the farm in 1996

sustainable. Our use of nitrogen has been reduced, and we use less fungicides too. Yields are still generally very good, with the exception of last year's small area of second wheat. This year's second wheat looks much better.

Because we are spending a lot of time off farm on other projects, and we have virtually no on-farm grain storage, the crop rotation has evolved into a mixture of first and second winter wheats, with our SFI whole-field options as break crops. This is a lower risk system and means farming for us is part time.

We have also made a decision to completely retire from the farm in October 2026. We could have done another three years before the Farm Business Tenancy was due to end, but the time feels right to go next year.

Both our sons have good careers away from agriculture, which means we have no succession to plan. In some ways this may seem a shame, but we are proud of their achievements and very happy that they are getting on with life away from the farm.

We are looking forward to our last year of farming. The machinery dispersal sale is booked for September 2026, and we are refurbishing a house in our local town that we bought a few years ago to live in. We have been fortunate to have had tenancies on three different Cambridgeshire County Council-owned farms over the last 36 years, but we now look forward to hopefully seeing another young family have a chance to farm here. I just hope they don't have a plough...

While we will undoubtably miss the farm, I am looking forward to having more time for other interests, which may include a bit more consultancy work, definitely more music and some steady cycling. We will also hopefully get some more travelling done, including exploring with our campervan.

We will also miss the fun of having visitors to the farm. We have welcomed hundreds of visitors over the years from all over the world, and shared knowledge of our farming system, and our triumphs and failures. We hope to continue meeting with people and I may have time for a few more speaking opportunities which are always fun.

AGRONOMIST IN FOCUS...

LOOKING AHEAD: BUILDING RESILIENCE AFTER ANOTHER TESTING SEASON *BY LOUISE PENN*

I'm still undecided on how I feel about this season, and from an agronomic perspective, I can't quite predict where yields will land. On one hand, crops have faced relentless pressure: a wet autumn followed by a record breaking dry spring. But on the other hand, some crops have surprised me and are holding up remarkably well.

Oilseed rape crops, in particular, have developed large seed size and stayed remarkably clean. We've seen little to no disease all season across the board. The wheat, as expected, is burning off fast, but there's still a fair amount of green leaf area left for grain fill. I'm cautiously optimistic about hitting protein targets, which feels more achievable this year.

That said, I think most of us are tired of the constant extremes in the weather. But I'm slowly coming to terms with the fact that this isn't an anomaly anymore, it's becoming the norm.

At home on the family farm, our investment in regenerative farming and building soil resilience has really paid off. After the 270 mm of rain we had at the end of September, we couldn't even think about drilling until mid-November. Yet, the crops look remarkably well considering the challenges. The lighter land, in particular, has benefitted from being left undisturbed. Moisture retention has been far better, and those fields aren't burning off or showing drought stress as badly as we would've anticipated.

Next year, like many of my farming clients, I'm already focusing on the future, though I'll admit, we're all getting a bit fed up with constantly hoping that next year will be better.

We do, however, have a number of positive changes on the family farm that we have implemented this year. We were fortunate to secure an SFI agreement before the scheme paused on the 11th of March, though I have to thank a well-timed rumour from a friend for that. Thankfully, I submitted Dad's application just in time!

Our SFI agreement is designed to support regenerative practices we are already doing, such as direct drilling, companion cropping and no insecticide. As well as helping us to develop and implement further practices such as catch cropping and variable rate application of nutrients. These are to be layered onto our continuous wheat rotation. Some may question whether this is a sustainable rotation in a regenerative system. However, I do believe there is a place for this rotation in a regenerative system and above all this rotation will be profitable in a time when many rotations are marginal. There are several farmers in our area successfully growing continuous wheat with minimal take-all issues, largely thanks to healthy, functioning soils. My aim is to prove that you can grow your most profitable, highest margin crop year after year, but with one critical addition: diversity.

We'll be integrating that diversity through several approaches. Between

wheat crops, we'll establish SFI-supported catch crops, a mix of buckwheat, phacelia, linseed, and potentially some turnips to enable grazing with livestock. Within the wheat itself, I'm introducing a linseed companion crop and exploring other options to layer further diversity, perhaps variety blends or alternative companions like beans. We will also be experimenting with the Johnson-Su bioreactors we built in October, rumbling our catch crop seed in it to

increase the diversity of biology in our soils.

This system will be supported with additions of organic matter, including poultry manure, a new addition for this season, chopping straw wherever possible, and increasing livestock integration. We will graze the catch crop to terminate them with our sheep and, if conditions allow, even graze some wheat crops in the spring.

By stacking SFI options, no till establishment, catch crops, companion cropping, reduced insecticide use, and variable rate inputs, I believe we can create a simple but highly profitable rotation that suits our mixed farming system. Simplicity is important to us. As a working livestock farm, certain times of the year such as lambing time demand our full attention, so our arable system has to match the peak and troughs of the livestock enterprise.

I'm trying not to dwell too much on this year, though I will admit, agronomically, walking crops in the sunshine has been far more enjoyable than traipsing through endless rain. Instead, my focus is on next season: how we can evolve our system, further improve soil resilience, and adapt to whatever extreme weather comes next. Because, like it or not, it's here to stay.

FARMER FOCUS TIM PARTON

This growing season has proven to be the driest most of us have ever seen, bringing its own challenges and shortages within the plant. Magnesium has been short across the country and, in my opinion, it's a shortage that needs to be addressed, since this powerhouse nutrient is key to photosynthesis and growing a healthy crop. Magnesium is located in enzymes in the heart of the chlorophyll molecule and is vital for carbohydrate utilisation within the plant, thus essential for health and growth. It is also responsible for the production of rubisco, which is the essential enzyme responsible for carbon fixation and also helps with the synthesis of nucleic acids and proteins which are critical for optimum growth. You can start to see why magnesium deficiency needs to be corrected during the growing season and confirms the significance of regular sap testing! Would you trust a doctor to make a diagnosis with little or no information, basically just guessing? No, I didn't think so. So why would you not want to test your plants to see what is happening with their health.

Time and time again sap test results do not match soil results. You need to utilise all the information at your disposal to try and build the jigsaw puzzle of optimum growth and yield. It is an intricate puzzle requiring a plan to mature to achieve the premium results you are after as a farmer. The complex organization of maintaining plant homeostasis is constantly adapting to its environment.

This year, once again, I have not used fungicides. Why would you use artificial chemicals when nutrition and biology can do the job for you, without having the negative impact that fungicides have on residues and soil health?

It hasn't been a prolific disease year, but I have seen plenty of yellow rust and powdery mildew around the country. Once you can keep plants balanced / in healthy equilibrium/ homeostasis, they remain healthy. It has been so long now since I have used fungicides, I have to admit I am no longer up to date with product names. From my point of view, it's a nice position to be in!

We had a fantastic day at the Green Farm Collective conference. It was a total sell-out, with a tangible feeling of community and positive vibes throughout the day. There was a lot of networking and number exchanges and many stories of trials were shared.

To re-emphasise the point if you haven't already got it, plant wellbeing and strength develops from a healthy functioning soil. All life starts from soil, as it has been doing for millions of years before mankind came into existence, so why do humans think

that we know better? Consider the short time that plants and the human race have been on the planet together and the damage and destruction that the latter have done to the former and it is time to realise that we need to farm and live in a more responsible way for the generations to come.

We had a fantastic day at the Green Farm Collective conference. It was a total sell-out, with a tangible feeling of community and positive vibes throughout the day. There was a lot of networking and number exchanges and many stories of trials were shared.We started the day with David

Purdy who gave an excellent talk on his work at Lamport, showing the importance of cover crops to improve the soil; something which I definitely agree with as I have seen the benefits here myself and why I always see cover crops at the heart of what I do. I have every field growing a cover crop on it within a twelve-month period. It is always all about getting carbon back into the soil, something I spoke about when presenting Eddie Bailey's (of Ryzophyllia) talk. Eddie had unfortunately double-booked himself and ended up having to go on holiday, which was booked pre-Covid. How could he choose that when he could have been at the GFC conference! I mean, come on Eddie! But no, joking aside, I enjoyed presenting Eddie's work. e has been a top geologist for his entire career and has seen many soils over that time, all which are depleted and not functioning. This is the state we find ourselves in after much mistreatment of our soil from deep tillage and excessive use of nitrogen, something which a working soil cannot cope with. Thus leading to the food chain within the soil getting broken and nutrients being unavailable.

Then came Matthew Adams from Growing Real Food for Nutrition (GRFFN), who has done a lot of work testing food from working soils, starting out using hi-tech machinery, but then more recently using a refractometer alongside one of the most underrated, yet sophisticated bit of equipment that we all possess — our sense of taste. Who would have thought that the best bit of equipment and technology is sitting right on top of our neck! Matthew has done a lot of work out in India proving that our own taste buds are the best tool to measure the goodness and quality of food— by measuring the sugars in plants with correlate to taste. All those phytochemicals stored within that plant and the extra nutrients all come from a functioning soil. It was a really informative presentation.

At lunchtime, Matthew held a tasting session of four different breads of similar type, one of the loaves being baked by my own fair hands using our certified regenerative flour from GFC: this was really putting myself on the line! Yet unsurprisingly, the GFC loaf using certified regenerative flour from GFC got half of all the votes cast and was the clear taste winner on the day. (Thank you, Lord!), That was such a lovely feeling and brought a sense of pride to me that I hadn't felt for a long time. It has been such a journey to get our GFC flour to the marketplace and the four of us (Angus, Jake, Mike and I) have put a lot of energy into making this happen. Anything can be achieved if you have the vision and energy.

Arable farming is still in a perfect storm and I feel any extra income

that we can generate from our flour for regenerative members will be very welcome and one way I can see farmers getting over the loss of income from depleted government support. The one thing we must all stand together on is that we don't sell ourselves short on carbon neutral products, since interest is growing rapidly on the carbon footprint of crops/food. We must not let the rewards slip through the net without financial increase. No other profession

can regenerate the planet and its inhabitants like a farmer, so we must make sure the work that we are doing is rewarded appropriately.

I was also fortunate enough to be invited to speak in Sweden at the Bona Forum Soil Health Conference. It was a fantastic couple of days, plus a shock to see crops with ample water, at least a month behind our crops here. Sweden's growing season is shorter than ours so brings different challenges, as do all countries around the world, but the constant common factor of all the soils I see is the declined quality brought about from the chemical farming system we have been implementing over the last 80 years. All lands need carbon to be replaced in soil along with the microbes to process it. In my opinion we cannot waste a minute in my opinion to start regenerating all of the soils that are used in agriculture. Wherever I go there is always someone to say regenerative practices won't work here, which always makes me smile. It's been working for millions of years, so why is it going to suddenly stop working? We may have to approach it with different methods or from a different angle, but regenerative farming succeeds everywhere. You just sometimes need to think about the approach that is needed. A working soil always amounts to a profitable business and that combination is essential in the chaotic times that we currently find ourselves in. Never has it been more important to have your business in good order.

There may be tough times ahead with this current government, but as always, I am sure, collectively as a profession, us farmers will not only get through, but will show the way for generations to come.

AGRONOMIST IN FOCUS...

TIME TO GIVE SOILS A LIFT? *BY CHRIS MARTIN, AGROVISTA*

After two incessantly wet winters followed by virtual drought conditions, soil biology is approaching an all-time low in many fields, says Chris Martin, Agrovista's head of soil health. He urges all growers, including the most ardent regen enthusiasts, to check they are not heading for a costly backward step this autumn and beyond.

Some soils have taken a beating over the past couple of seasons. High and heavy rainfall over the past two winters has pounded fields and severely reduced soil porosity, particularly in less resilient soils carrying poor crops with limited rooting.

Other soils that have decent organic matter levels and well-established winter-sown crops with good rooting have weathered the storms much better. Some actually remain in a very good state, particularly those with deep cracking following the recent dry weather.

However, good and poor soils can often be found on the same farm. The key difference between them is the extent of the connective porosity within the soil. A healthy soil has a good network of pores and channels that enables gases to circulate, water to drain and roots to grow. All this helps biology to thrive, putting energy into the soil and building and cycling and releasing nutrients so crops can flourish.

It's not only cultivation-based strategies that degrade poor soils. A lot of direct drills use discs, which, through their geometry, have a compressing effect on the soil, so using them on soils that are already tighter than they should has not helped. Crops have grown moderately on the whole and are unable to feed sufficient biology, so these soils lack the energy they need to repair themselves.

In extreme cases, there's nothing to feed the biology, Soils are virtually dead and have the structure of a brick. Soil without biology is geology, and you can't grow a 10-tonne crop of wheat on rock.

The key is identifying which soils can be left alone, which need a light touch and which need varying grades of TLC. We need to know where our soils are today, what potential they have and how we can best realise that potential.

In the short term, we need to be looking at crops in the ground, identifying the thinner, poorer areas and mapping them, using eyes, satellite images or drones, whatever suits. We can then employ remedial measures matched to the scale of the problem to start turning these soils around.

We should also be measuring organic matter content and functionality. Many farmers are now testing for organic matter in line with requirements set out under SFI and Farming Rules for Water.

Upgrading to a slightly more detailed test will reveal the potential of that field to hold organic matter and how functional it is, using biological indicators and a carbon-nitrogen ratio assessment. It might cost a few pence more per acre but could potentially save thousands of pounds, providing a clear and attainable target level to build more resilient soils using medium/longer term strategies.

It must be emphasised there are no silver bullets and no quick fix. A poor soil can go backwards quickly, but you can't create the biology needed to improve it overnight.

Remedial cultivations

Metal alone will never build structure. It can provide a very useful first step to repairing degraded soils, but we must introduce some life at the same time in the form of roots to ensure the small backward step of cultivation creates a big forward step for the soil.

Knowing where to use cultivations, and to what extent, is crucial. We only want to use enough to create suitable conduits to aerate soils and ease rooting to enable biology to thrive.

As I write this in mid-June, if it stays relatively dry over the next couple of months direct drilling could remain the best option for many healthy resilient soils. Well-cracked, heavier land may benefit from a light discing or shallow

tine cultivating, not just to create a stale seed bed but to flick clods into the cracks, which will lodge at different depths. These clods will then expand and contract over the winter, subsoiling more effectively than metal could ever do whilst preserving the natural pillars of support in the soil profile. On many heavier clay/higher magnesium soils this will be by far the best and most cost-effective way to restructure soils in a dry period.

In some other cases, particularly with less self-structuring soils, the best option might be ploughing and appropriate cultivations to establish a good commercial or cover crop. Rotational ploughing can also significantly reduce grassweed issues.

Another option might be to target low-disturbance subsoiling on the headlands or turning area and direct drill the rest.

There is no blueprint to improve poorer soils. There are hundreds of types and every farm is different, but there are general principles we can take forward.

Soils in poor health will have to be moved to a degree to kickstart the recovery process. But, generally speaking, the less we can move poor soils the better.

Cover crop 'mapping'

One of the best tools we can employ is a cover crop. This can provide a living map of soil health. On less degraded soils it will grow relatively well, building biology and energising the soil into the bargain. On stressed areas it will struggle, highlighting the need for some type of remedial cultivation.

Usually a low-disturbance subsoiler within the cover crop working at a relatively shallow depth (confirmed by putting a spade to good use) will be sufficient, freeing up the cover crop roots to start repairs.

The need to avoid overloading a poor soil is as relevant here as with a commercial crop. I always advise starting with a smaller, simpler cover crop, maybe a two-way mix such as black oats and phacelia, and build from there. A 10-way diverse cover crop will work wonders on good soil, but poor soil doesn't have the capability or the biology to support it.

Another major point to consider is whether a really poor soil is ready for a commercial crop. An autumn cover crop followed by spring crop might be a good option, or you could follow with another cover crop in the spring, setting up an early sown first wheat the following autumn into much improved soil. It might take several years of TLC to get to where you want to be.

Whichever route we embark on, retaining some flexibility over establishment strategies is critical to build and maintain resilience in our soils.

This was clearly demonstrated at Agrovista's trial site at Balne in Yorkshire. After five years on poor soils, non-inversion tillage plots maintained the highest levels of soil biology over and above direct drilling.

There was very little biology in the soils at the start of the trial, so the direct-drilled plots struggled throughout. But, thanks to the small amount of horsepower energy introduced from the start, the non-inversion tillage plots supported the biggest crops every year, feeding the soil biology.

This might be contrary to what some regen enthusiasts are thinking but it makes a lot of sense when you think about it logically.

FARMER FOCUS TOM MARTIN

Sharing Data, Growing Together: My Experience with AHDB Farmbench Groups

"Hey Dad, let's share all our performance and farm data with our neighbours!"

For many farmers, that suggestion would sound like a nightmare rather than an opportunity. Yet, when I look at the farmers I most admire (those who run resilient, profitable and forward-thinking businesses), almost all of them cite benchmarking, data sharing and collaboration as some of the most important tools they have.

When my father started on the farm some 60 years ago, finishing school on a Wednesday evening and starting work the next morning, our neighbours were our direct competitors. Why on earth would you share any data with them? If they did better it might drive prices down. You might be pushed to reveal secrets you'd rather keep quiet. It's no surprise that a certain reserve and reluctance to share has lingered in British agriculture.

But today, our competitors are not really next door. They're in the Americas, Eastern Europe and Australia. In this global market, we gain nothing from our traditional British reserve; instead, we can accelerate our learning by leaning on each other's experiences. They say experience is that thing you get just after you needed it, painfully true in my case on occasions. But if we can learn from the experience of our neighbours, and then put it into practice on our own farms, we can all move forward together. A rising tide, after all, lifts all boats.

Joining Farmbench: Overcoming the Fear of Exposure

About six or seven years ago, I joined the AHDB Farmbench programme, not just one group, but two. Each group includes around half a dozen farmers, and in a couple of cases, land agents who farm on behalf of owners. One agent attends alongside the farmer they work for; another participates in their own right.

At first, you might expect a certain caution. After all, competition can be keen between neighbours, but doubly so between professional advisers. It took us about a year to properly settle in and build trust. I remember worrying that I would always be the worst performer (and, let's be honest, I often am!). But once we realised that each of us had things we did well and areas where we could improve, the atmosphere transformed. There are as many different practices as there are farms, and seeing these side by side is nothing short of golden.

Entering Data: The Necessary Ritual

I almost look forward to the couple of hours I spend entering data each year. The first time, it took me a solid half-day, possibly more, as I familiarised myself with the different measurements, dug through the farm office for records and worked out exactly what the system wanted. We also had to agree as a group on points such as how to cost family labour, whether to include drawings as wages and how to handle depreciation.

Now, the process is quicker. But even if data entry feels like a chore at times, it's always worth it for the insights that follow.

The Annual Pub Meeting: Learning Over Lunch

If I only slightly look forward to data entry, I certainly look forward to our winter pub lunch at The Black Horse, where we gather to discuss the results. Our groups are arable-focused, covering around half a dozen crops, though some members also have livestock. Ventures unique to one farm, say, a specialist crop or enterprise, are frequently left out of the local discussion, but they can often still be benchmarked nationally thanks to AHDB's extensive dataset.

Benchmarking against farmers from further afield is one of Farmbench's greatest strengths. We compare ourselves locally, regionally and

nationally, as well as by similar land type. This isn't theoretical; it's real-world data, from real farms, with all the messy realities that come with it.

Data Brought to Life

Each meeting is facilitated by our AHDB Insight Manager who brings A3 sheets covered in charts and figures, plus some delightfully dinky AHDB-branded rulers to help read across the data. We go through the results crop by crop, discussing input costs, selling prices, overheads, and of course, yields.

These discussions spark broader conversations about farming practices, weather impacts, disease pressures and decision-making. Whether talking about seed rates or machinery investments, it all gets dissected and debated.

Despite differences in business structures, from fully owned farms to complicated tenancy arrangements, we often arrive at shared conclusions. But, as ever when farmers get together, it's the conversation, not just the spreadsheets, that really cuts through.

Key Takeaways: More Than Just Numbers

Over the years, my own takeaways have included:

- The value of rotations: Thinking not just crop by crop, but about maximising profitability across the whole farm.
- Taming fixed costs: Especially the headache of machinery repairs and spares. This was particularly challenging before we had a mechanically-minded member of staff.
- Attention to detail: That's the 'focus' that is now widely seen as the seventh pillar of regenerative agriculture.

While I can't cite peer-reviewed papers to prove it, I've found the psychological benefit of gathering together in winter just as valuable as the spreadsheets. Sharing highs and lows with others helps reframe challenges and reveals opportunities.

The facilitators do an excellent job drawing everyone into the discussion. Two hours flies by far too quickly, and the debates inevitably spill into phone calls, WhatsApp groups and further one-on-one chats long after the official meeting ends. Ideas are floated on our WhatsApp group almost weekly, and it is this group of friends that I turn to for advice.

Summer Walks: Seeing Ideas in Action

Each summer, a different group member hosts a farm walk. These are perhaps even more valuable than the winter sessions. One visit stands out in my memory: after an hour, we had progressed just 20 yards down a tramline because the discussion was so rich and engaged.

There's something powerful about standing in another farmer's field, seeing firsthand how they manage rotations, drainage, cover crops or machinery setups. It's an open invitation to ask, "Why did you do that? What did you learn? Would you do it again?"

Why Other Farmers Should Join

The benefits of benchmarking through Farmbench are immense, yet participation across the UK is still relatively modest. AHDB data suggests that farmers who benchmark consistently make better-informed decisions, respond more quickly to external pressures and often enjoy greater business resilience.

Farmbench is free, confidential and designed to be farmer-led. The support from AHDB staff is excellent; they don't just help input numbers but facilitate discussions that turn those numbers into actionable insights.

I'd encourage any farmer, whether arable, livestock or mixed, to give it a go. The first year might feel awkward. You might fear exposing weaknesses or feel overwhelmed by the detail. But push through that discomfort and you'll find an incredibly supportive community. There's a quiet power in seeing your numbers honestly, learning from peers, and, just as importantly, celebrating each other's successes.

Final Thoughts

In an era of global markets, political uncertainty and evolving consumer demands, no farm can afford to operate in a bubble. Farmbench offers a simple yet transformative way to break down those fences, metaphorically, at least, and learn faster together.

For me, sharing and learning from this group has been one of the most rewarding parts of my farming journey so far. I've gained insights I would never have reached alone, cemented lifelong friendships and found new motivation to keep improving year after year.

So if you've ever thought about benchmarking, or even just vaguely wondered what's really going on behind your neighbours' hedges, I can only encourage you to take that first step. You might just find that sharing data, rather than being a nightmare, becomes one of the most valuable tools on your farm.

Spraying Glyphosate

CLEAN **WATER.** CLEAN **KILL.**

PRACTICAL GLYPHOSATE STEWARDSHIP FOR DIRECT DRILL AND REGENERATIVE FARMERS

For farmers working with direct drilling or regenerative systems, glyphosate isn't just another herbicide – it's a crucial tool. Whether it's managing grass-weeds, clearing stale seedbeds, or taking down cover crops, glyphosate helps create a clean, manageable seedbed without the need for cultivation.

But glyphosate's performance isn't guaranteed. In fact, many farmers unknowingly lose efficacy because of one of the most overlooked factors: the quality of the water they use in their spray tank.

Why water matters

Glyphosate is a polar molecule, which allows it to react with divalent cations of calcium and magnesium that are naturally present in spray water – the main causes of water hardness. When glyphosate is mixed in hard water, ionized glyphosate forms a strong chemical bond with cations, forming a less soluble salt of glyphosate, that leads to reduced uptake and biological activity. This is often referred to as 'lock-up'. The result? Weaker control, patchy kills, and more weeds surviving to seed. Fact – you could be losing up to 30% glyphosate efficacy to hard water cations.

Water hardness varies hugely depending on the source. Borehole water, mains water, and rainwater all have different mineral contents – and even the same source can change over time, especially if water is stored in tanks or pipes that add contamination.

This variation means guesswork won't cut it. Dosing water conditioners without knowing your water's hardness is a gamble: too little and glyphosate is wasted, too much and you risk unnecessary cost.

Test, don't guess

The key is to test your spray water. A simple hardness test with a digital meter, which measures total dissolved solids in the water, will give you a good indication of water hardness. With that, you can apply the right amount of a proper water conditioner.

Dedicated water conditioners such as X-Change, are designed to sequester calcium and magnesium ions, acting in a sacrificial way, enabling glyphosate in solution to avoid these antagonistic reactions. This isn't just theory – farmers who condition based on test results often see a noticeable improvement in weed control and consistency.

Beware old habits: AMS and citric acid

Some growers add ammonium sulphate (AMS) or citric acid to their tank to try to "soften" water. But these aren't true water conditioners.

AMS doesn't actually remove hardness ions – it simply provides ammonium, which serves as a competition agent for divalent cations to form glyphosate salts. Because of its competitive action these products are said to provide partial water conditioning.

Citric acid can bind with cations effectively, but its ability to complex is pH dependent. Glyphosate's acidity makes citric acid a poor choice of water conditioner. Citric acid is often used to enhance uptake of foliar applied trace elements and is effective in doing so. However, this means citric acid-metal complexes compete with glyphosate for uptake through the plant cuticle, leading to slower uptake. It's a shortcut that often causes more issues than it solves.

If you want reliable glyphosate performance, it's better to use a conditioner that's specifically formulated to tackle hard water ions – and dose it based on testing, not habit.

Formulation and adjuvants matter too

Not all glyphosate products are created equal. The active ingredient is the same, but surfactant packages vary widely.

Cheaper glyphosate formulations tend to have cheaper, and less effective surfactant systems. As a systemic herbicide, glyphosate must penetrate the plant's waxy cuticle, weaker surfactants make it harder for the herbicide to enter the leaf – especially in tough weeds or under dry, dusty conditions.

This makes the use of an effective adjuvant even more important to boost coverage, improve spreading, reduce evaporation, and aid penetration. Adjuvants like Validate can help compensate for these weaker formulations and improve overall control, while taking care of the ions that cause hard water.

Protecting glyphosate for the long term

Resistance to glyphosate is a growing concern, particularly for pernicious grassweeds that plague arable rotations. The first case of glyphosate resistant Italian Ryegrass has now been confirmed in the UK. When glyphosate performance drops, it's not just about reduced control this year – it's about opening the door to weed resistance on your farm that can make future control harder and more expensive.

Example of Glyphosate failure – Source ADAS

In direct drill or regenerative systems, the risk is greater because surviving weeds aren't disturbed by cultivation and have the chance to reproduce. Even small failures in control – due to hard water, poor conditioning, or weak formulation – can have big long-term consequences.

Good stewardship isn't optional. It's the best way to keep glyphosate effective for years to come.

What the guide offers

The De Sangosse Glyphosate Stewardship Guide, produced in collaboration with John Cussans of ADAS, pulls together all these insights into a clear, practical resource. It explains:

- How water hardness affects glyphosate efficacy
- Why testing water is critical for correct conditioning
- How to test water hardness and what the results mean
- What makes a good water conditioner (and what doesn't)
- When and why to use adjuvants
- Water source and storage – how to avoid problems
- Practical tips to reduce resistance risk alongside WRAG guidelines

It's written with farmers and sprayer operators in mind – clear, straightforward, and focused on real-world results.

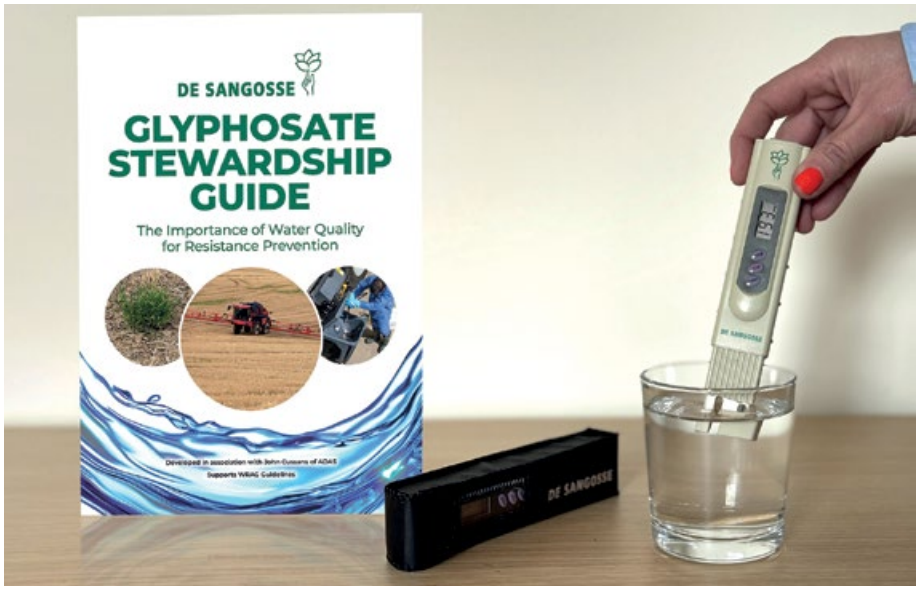
Every spray pass counts

Glyphosate is a cornerstone of reduced-till and regenerative farming. But it's only as good as the conditions it's used in.

Paying attention to water quality, product choice, and application techniques, timing, and environmental conditions at application can mean the difference between clean, reliable control – and patchy, ineffective sprays that cost time, money, and compromise your ability to farm in a regenerative manner.

Testing water, dosing conditioners correctly, choosing the right formulation, and using adjuvants where needed are simple steps with big payoffs.

Because in a system that relies on glyphosate, clean water means a clean kill – every time.



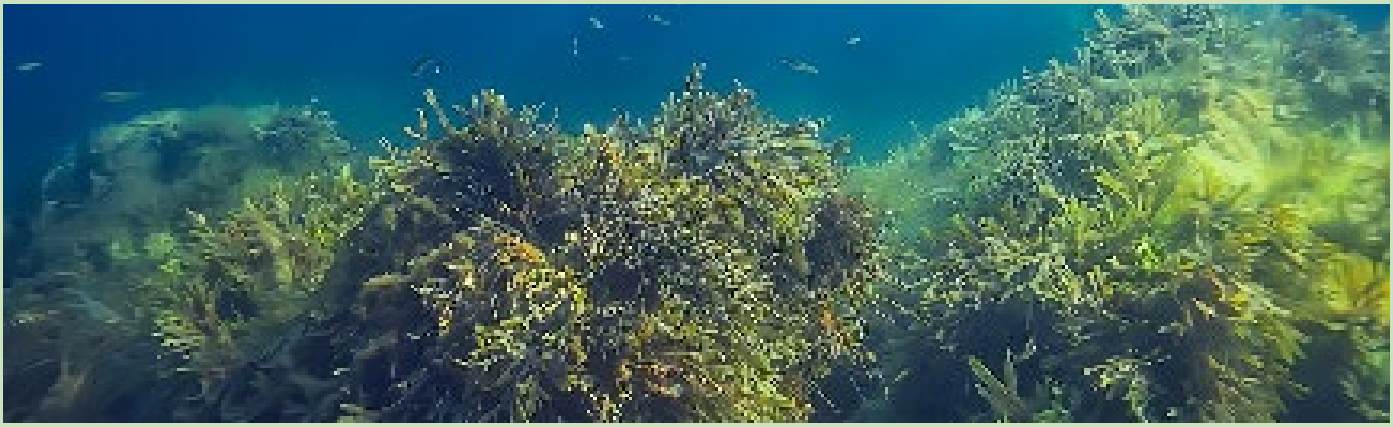
Glyphosate Stewardship Guide and Testing Kit

DE SANGOSSE

Download the guide

The De Sangosse Glyphosate Stewardship Guide is available to download for free – or request a printed copy to keep in the cab.

Scan the QR code or contact De Sangosse at support@desangosse.co.uk



SEAWEED IN AGRICULTURE

By Dr David Cutress: IBERS, Aberystwyth University.

- Seaweeds have long had suggested benefits for agricultural use
- Research suggests green seaweeds to be beneficial for soil/plant amendments and red seaweeds to have some potential for animal feeds
- To be able to include at meaningful levels, the production and supply chain of seaweeds needs to be researched and developed further

Seaweeds

Seaweeds are algae, specifically, they are macroalgae and despite performing many of the same functions as plants they are not plants. For this reason, you may sometimes see seaweed referred to as non-vascular plants but unlike plants, these species absorb nutrients which they use for photosynthesis directly through their cell walls. They also lack stems, roots, xylems and many other specialised plant structures. The three main groups of seaweeds are green, red and brown and their colours come from the combination of chlorophyll and other accessory photosynthetic pigments found within each species, for example, red seaweeds have phycoerythrin and phycocyanin pigments for absorbing light that reaches deeper into the ocean and the brown seaweeds have the pigment fucoxanthin. Seaweeds have long been utilised by people for many reasons including as a medicinal source with more modern research finding the specific elements within seaweeds that lead to its various functions. Some of the roles of seaweeds in general include;

- Food (healthy low calorie)
- Fertiliser
- Climate change reduction
- Explosives
- Supplementary livestock feed
- Medicine
- Plant biostimulants
- Bioethanol
- Cosmetics
- Bio yarn
- Edible packaging
- Bioremediation
- Dyes
- Gels

But within agriculture, it is the highlighted roles that are of most interest.

Seaweeds and agriculture

The high level of interest in seaweeds and seaweed extracts for use in plant growth and agriculture is clear when we observe that the journal article from 1992 titled 'Seaweed extracts in agriculture and horticulture: a review' has been cited almost 350 times in subsequent papers. But before these scientific perspectives, the benefits of seaweeds were suggested throughout common historic practices of coastal farming communities. This included the grazing of harvested seaweed for livestock as a supplementary food source and the utilisation of beach-cast seaweed as manure and fertiliser for the land, as far back as Roman times. As well as native macroalgae species vital to freshwater and marine ecosystems there is a significant impact surrounding invasive algae. As human activity impacts waterways and marine systems this often causes eutrophication where the overabundance of nutrients leads to increased algal growth and invasion of non-native species. These increased levels of algae require collection and removal for ecosystems to return to normal and the utilisation of this 'waste' could allow some environmentally focused circularity. Though of course, this circularity is finite if agriculture and other water pollution sources are targeted for reduction and removal in the long run.

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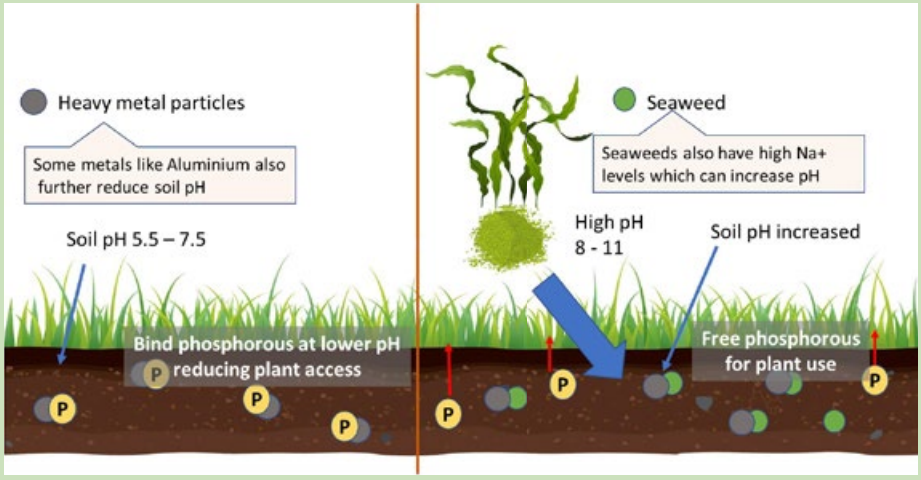
Direct fertiliser and land application

Generally, where seaweeds are applied to the land they are applied whole, finely chopped, powdered or in aqueous extract forms.

Benefits

Seaweed (or its extracts) incorporated as a soil supplement or fertiliser is said to have a range of potential uses within arable and horticultural systems. It can effectively be a carbon-neutral fertiliser additive similar to other green manures. Whilst seaweeds are known for being lower in nitrogen (N) and phosphorus (P) they do tend to be higher in potassium (K). Seaweeds directly add plant rate limiting elements into soils but they can also function as plant biostimulants as they contain hormones that trigger increased growth and nutrient uptake efficiencies in plants. Auxins, cytokinins, gibberelins, abscisic acid and ethylene are all found in seaweeds and they can act upon plant growth, ageing, cell division, germination, and stress management. Whilst there is a lack of meta-analyses of the impacts of different macroalgae application effects on crop yields and nutrient requirements, multiple studies suggest beneficial impacts.



Across the three groups of seaweed, research suggests that green macroalgae have the most promise for soil supplementation as they contain components that can promote the removal of detrimental soil and plant fungi and pathogens (such as moulds and mildews) and drive increased plant defence. They have also been shown to have potential roles in preventing the damage from plant nematode species on crops which could act as a unique organic replacement to soil-applied nematicides.

Seaweed and seaweed products including biochar are known to have a neutral to alkaline pH which through direct application to soils can act to amend soil pH as a liming agent. Other outcomes causing this liming function seen within seaweed trials have been associated with their levels of sodium (Na+) as well as high calcium (Ca) and alginate levels, which combined, are involved in the seaweed's ability to bioaccumulate heavy metals. This removal of metals can impact pH by removing access to particles from soils which would normally cause increased acidity. Application of seaweed to contaminated degraded lands could also help with the removal of heavy metals such as aluminium (Al) thereby blocking/lowering the ability of Al to bind to plant limiting nutrients like phosphorus. This could in certain systems further help to reduce fertiliser requirements.

Furthermore, one of the properties of commercial seaweed additives that is often quoted is that their alginates have structural impacts on soils, forming complexes that help to absorb water improving water retention, increasing aeration and soil pore functionality and generally improving soil structure. This links with the interest surrounding hydrogel application on soils for unique slow-releasing fertiliser benefits along with improved moisture levels around plants in soils.

Crop	Positive impacts	Paper
Marigolds	~40% increase in flower weight 50% less chemical fertiliser required	*Sridhar & Rengasamy (2010)*
Tomato seedlings	Increased plumule length, radicle length, increased dry weight, increased shoot length and plant height, worked better as soil amendment than foliar spray	*Hernández-Herrera et l (2013)*
Bean	Increased germination	*Carvalho et al. (2013)*
Broccoli	Increase in antioxidant activity, flavonoids, phenolic and isothiocynate, increases in stem diameter, leaf area, biomass, enhanced early growth and reduced white blister (Albugo candida)	*Mattner et al. (2013)*
Mung Bean	Increase in total protein, total carbohydrate and, total lipid; increase in shoot and root length	*Ashok Kumar et al. (2012)*
Watermelon	Increase in yield	*Abdel-Mawgoud et al. (2010)*
Onion	Increase in yield and reduced severity of downy mildew	*Dogra and Mandradia (2014)*

Barriers to use

Seaweed biomass needs more supply chain and market considerations in a lot of instances with direct site-based production and subsequent use ensuring that the material does not ferment and degrade, leading to it becoming just another form of waste that can have detrimental impacts including the release of detrimental gasses such

as hydrogen sulphide. One method that can prevent this nutrient wastage and stabilise the beneficial aspects of seaweeds is to use composting. In one set of experiments using green seaweeds composted with sugarcane wastes re-applied to subsequent sugarcane growth, it was found that high seaweed composts led to four times higher aboveground biomass than commercial composts lacking seaweed. Even in studies where insignificant impacts on yield and weight of biomass occurred, it was still noted that benefits in the levels of micro and macro elements (such as boron, iron, copper, zinc, calcium, sulphur and potassium) were seen within the plant biomass harvested.

Sulphur compounds in high levels in some seaweeds may act in opposition to the liming ability when added to soils if anaerobic conditions are prominent (soils aren't aerated) as this can lead to microbial oxidation of sulphur to sulphates.

Feed for methane reduction

The other area where seaweeds have received a great deal of attention within agriculture is their suggested roles in livestock feed, with much research and media coverage focusing on their suggested environmental impacts.

Benefits

Seaweeds can be high in protein (up to 47% weight in some cases) whilst others have beneficial omega-fatty acid levels. This protein level aspect makes them desirable for consideration as an alternative protein source for livestock. When this is combined with the presence of naturally occurring compounds in seaweeds which impact the production of methane it is easy to see the interest. Seaweeds contain bromoform which acts to inhibit the final step in methane formation due to organisms in the rumen, and this is thought to be the main mechanism of action. Red seaweed species are known to have higher bromoform and similarly functional bromochloromethane levels. Across studies methane reductions of up to 100% (over short study timeframes) and 98% (over longer 90-day timeframes) have been observed, whilst other studies have noted far less reduction or even, in a few cases, some minor increase in methane level in the short term. These environmental impacts of seaweed as feed are of high interest for future net-zero strategies and as such we are likely to see more research to try and untangle these conflicting results in the future through large-scale trials. Alongside methane impacts other reported feed effects have included live weight gain improvements and dry matter ingestion reductions.

Barriers to use

As noted above in the benefits of seaweed for fertiliser and soil application, seaweeds are very good at accumulating heavy metals, this is true in aquatic environments before harvest also. For this reason, testing and sourcing of seaweeds for livestock ingestion may need considerations to ensure any rations do not lead to impactful levels of adverse metals making their way into the animal's body. Similarly, iodine toxicity for livestock as well as its incorporation into meat and milk may also be a barrier of

consideration for the use of seaweed in feeds. High levels of iodine in seaweeds have been noted in one experiment to lead to milk produced with iodine levels as high as 3 mg/L which would make the safe tolerable limit of milk for adults around 300 ml a day and for children 1 litre of milk would contain over 15 times the suggested tolerable level. Whilst this is just one study it is enough to indicate that more research may be required.

Another possible barrier to use in livestock is the indication that there is a low level of palatability with seaweed inclusion in feed leading to reduced feed intake issues. Whilst many studies have shown inclusion rates up to 20% in sheep trials the average inclusion rate (across 10+ studies) was 12.8% (but ranged as low as 0.006%). This could be an area where specific extracted compounds from seaweed fare better than the whole product itself.

Other seaweed considerations

A big consideration surrounding seaweed utilisation is its potential value as a replacement for environmentally damaging fossil fuels. Seaweeds offer an interesting option for biomass growth for biofuel production for a few different reasons. Firstly, similar to plant-based biofuel options, seaweeds would be essentially carbon neutral. They also have promising biomass output levels and cost-effectiveness in their growth, but importantly they don't impact land use change and don't compete directly with any agricultural land application. This means that there can be no argument that it would be better to farm something else in place of seaweed due to the food vs fuel argument. This role could, however, be in direct competition for the supply of macroalgae for agricultural applications, unless excess was produced or methods were improved to separate the agriculturally important compounds from the biofuel beneficial biomass in an environmentally and cost-effective way. Furthermore, making seaweed incorporation feasible on a large scale would require direct seaweed farming across Europe to avoid import issues associated. Several publications have noted that there would likely be impacts on biodiversity associated with seaweed farming at such scales, though, as yet the true nature of impacts is unknown with some studies showing limited impacts and others showing a reduction in fish species biodiversity due to disturbances. This would require much more targeted experimentation before large-scale supplies could be achieved safely.

Artificial growth and farming of seaweed is a growing area of aquaculture with figures suggesting it accounts for ≥27% of total marine aquaculture production. Despite this, it is clear that much more research and development is needed on what species to farm/culture and how best to do this in the UK to have the level of resources for larger-scale incorporation into agriculture. Currently, the vast majority of seaweed farming occurs in Asia making export and import factors a huge consideration. The prospects of seaweed farming are high as these systems of farming don't compete with arable land or freshwater aquaculture and their growth has been linked with carbon mitigation strategies.

Seaweed removal for use in agriculture could serve other environmental and economic benefits. One way this might benefit is that large-scale beach-cast of seaweeds are often associated with negative implications for tourism due to the appearance and smell during fermentation. As such having mechanisms to collect this seaweed for beneficial agricultural purposes or any other beneficial purposes could go towards boosting the local economies of coastal regions.

The compounds found within seaweeds are already discussed for their direct roles in pathogen control and biocidal activities. But another area of interest is in chemically altering these compounds to have improved effects, with much research suggesting interesting antimicrobial roles following modification. These could ultimately play roles in improving livestock treatment options and reducing the impact of antimicrobial resistances which continue to be of concern to the industry.

Summary

Seaweed's and macroalgae's agricultural use could have a role in circularity, particularly in coastal regions or where farming practices increase eutrophication of nearby water sources and this leads to increased waterway macroalgal growth. Rather than allowing this to impact ecosystems, harvesting it for application back onto agricultural soils or feeds could be beneficial. For soil application, consideration of seaweed supply chains needs evaluating to ensure the logistics and cost (economic and environmental) vs value benefits of the application are fully understood. Furthermore, seaweed appears to work better in healthier soils where strategies are in place to reduce the levels of anaerobic microbial activity. This suggests it would work well in combination with sustainable practices such as cover cropping suggests it would work well in combination with sustainable practices such as cover cropping alternative protein source with some interesting environmental impacts that need further evaluation in large-scale trials. Green seaweed species show promise for soil application evaluation in large-scale trials. Green seaweed species show promise for soil application between these two products.

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FARMER FOCUS ANDY HOWARD

Looking back with a crystal ball

I am sitting here at the end of June, the weekend before Groundswell. I have just read through my last article I wrote for Direct Driller magazine, which is from September last year and wondering what I would tell myself if I could go back in time to then. Two main things I think: 1) Get on the tractor and start drilling everything, including the Blackgrass and BYDV. Yes, the pressure would have been higher, but I would have saved myself the stress of October when I looked out of the window at the rain and only 10% of wheat drilled. Not to mention the stress in December, scrabbling around fields wondering if it would all germinate. (Not all did.) 2) Submitted our SFI 24 application in January, without worrying about the gremlins in the computer system not allowing me to apply for every little parcel and option I wanted. If I had done both the above, then the farm would be a lot better off financially. However, I didn't and I can't change the past. I can only learn for the future. The main thing to take from the last year is the weather is getting increasingly erratic and we need to keep evolving our system. We need another drilling option for wet weather on our heavy ground or maybe not be so optimistic and just stop planting in marginal conditions.

Since the horrifically wet autumn, as predicted, we got a very dry spring.

Wheat in the autumn planted with beans vetch and peas

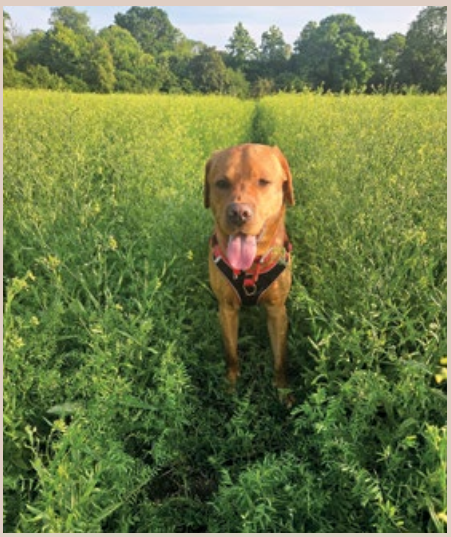
But even with all that, most of the farm looks okay. Not great — I certainly have a few fields that I will be relieved when the combine goes through them and we can start again — but okay. The wheat certainly has less biomass, but the ears are big and we have had a LOT of sunshine, so hopefully the specific weights will be high. Winter beans are average to poorl think due to the lack of moisture, the beans haven't flowered for long enough and we have a narrow pod canopy on the plants. After the monster crops of last year, it is disappointing as we have not done anything different. Grass seed, God knows? Linseed is okay but stressed. It was not easy keeping the flea beetle off the crop, but we did manage to get it established without the use of insecticides by using a couple of doses of liquid fish. The liquid fish did deter the beetles for a few days after using it which gave the plants a chance to grow away from the grazing. Spring wheat will probably flatter to deceive, again who knows? I think the crop of the year could be the lentils and camelina. (I hope I have not jinxed it now.) The lentils seem to have kept on flowering and podding during the current June burn-up and look great. The same cannot be said about the one small field of spring beans that have stopped flowering and podding and look less than ideal.

We have had two trials on farm this year. The second year of the compost extract trial will be harvested in a few weeks and hopefully we might see a positive result like last year. The other trial we are doing is testing a couple of products that are new to the UK: nano urea and nano phosphate are the two products. Hopefully if we can get the dose rate correct, we will be able to reduce traditional fertiliser rates by 25-50% without the adverse environmental issues of traditional fertiliser.

Trial of growing winter peas with winter beans

This week, I will be visiting Groundswell. It is always a good event to catch up with old friends and meet new ones. I will be going though with a different mindset than a few years ago. My BS radar will be on full alert! In recent years there have been many claims made without evidence in the regen ag sphere and I have had my fingers burnt. Too many products are being sold without any independent trial data, too many claims without evidence. If you ask for evidence and get given a number of a farmer that has had good results and nothing else, then walk away. This problem could be the real potential downfall of the movement. Lots of people jumping on the bandwagon without understanding the system.

I wish all a good harvest and hopefully



Lentils and camelina

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

CEREALS 2025

BASE-UK had a fantastic event hosting a dedicated conference, focusing on regenerative agriculture with the theme 'Robust Farming in a Changing Climate.' We covered Enterprise Stacking, Marketing Regenerative Products, Building Resilient Soils for a Sustainable Future, Strategies for Addressing Carbon Taxation, and much more. Thanks go to our amazing member speakers and guests and to Tees Law who generously sponsored and provided hospitality on the first afternoon.

GROUNDSWELL 2025

BASE-UK had another successful couple of days in early July with a constant flow of visitors to our stand and our drinks reception was extremely well supported by members and guests. We were also given the opportunity to discuss the impact and importance of SFI with the Secretary of State for Agriculture, Steve Reed and Daniel Zeichner MP.

FARM WALKS AND VISITS

We have hosted a wide range of visits and farm walks over the past couple of months and would like to take this opportunity to thank our members who opened their gates to host. These events took place all over the country from Scotland down to Surrey and the genoursity of members to share their knowledge, is what makes our organisation unique.

Thanks also to Agrovista for inviting our members to visit the Lamport Project once again.

Also, Joe Collins, who hosted a day visiting the Harper Adams University Farm along with Richard Hooper, the Future Farm Director, and agronomist Paul Cawood and for providing the opportunity to visit the research field he is working on.

DR JOE COLLINS

We are delighted to announce that Joe Collins, our PhD student is now fully qualified as a doctor! He will continue his research at Harper Adams on his systems-level evaluation of conservation agriculture in the UK. Updates on his progress will be presented to members later in the year.

ANNUAL CONFERENCE 2026 – SAVE THE DATE! - 11th & 12th February 2026 in Huntingdon. Details will follow

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.

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- Ongoing sponsorship for research undertaken by Joe Collins, PhD student at Harper Adams University.
- Forum – a private forum for discussions available only to members.
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For more information about how to join visit our website www.base-uk.co.uk or scan the QR code

DO YOU KNOW THE HIDDEN £ VALUE OF YOUR NATURAL CAPITAL?

AND WHAT IF YOUR FARM'S NATURAL ASSETS WORKED LIKE AN INVESTMENT PORTFOLIO?

By Anna Woodley from Trinity AgTech

For generations, farmers have been finely tuned to the physical and financial cycles of their land – balancing input costs with yield, timing the market, and managing unpredictable weather. The ability to manage complexity and make it pay is a defining skill of British agriculture. But in a rapidly changing farming landscape, one question is becoming more urgent: do you really know the hidden £ value of your farm's natural capital?

Not in terms of selling carbon credits or biodiversity units – though those may come later – but in terms of the everyday value your natural assets provide to your core business: producing food, efficiently and profitably.

The idea is simple. If your soil, water, biodiversity and other natural systems were treated as productive assets – not just background variables – how might that change your farm performance? And what if optimising those systems was the key to reducing your cost of production, improving animal health, and making your farm more resilient?

Natural Capital: A Working Definition

Natural capital refers to the stock of natural resources on your land – like soil, water, plant biomass, biodiversity, and air quality – that provide essential services for food production. These services include nutrient cycling, pollination, pest control, water regulation, and carbon storage.

While some of these benefits are invisible day-to-day, they underpin the physical productivity and financial performance of your farm. Take soil, for instance. A biologically active, well-structured soil holds more water, releases nutrients more efficiently, reduces fertiliser needs and improves grass growth. That's not an environmental nicety – it's a productivity engine.

The Real-World Payback: Improving Soils, Reducing Costs

Start with a grass sward, after all 58% of the UK's farmed land is under permanent grass. The quality of permanent grasslands for grazing is fundamentally shaped by soil biology and carbon levels. Soils with higher organic matter and healthy microbial life cycle nutrients more

effectively. That means higher forage quality, better digestibility, and more consistent growth across the season.

A 1% increase in soil organic matter can improve water holding capacity by over 20,000 litres per hectare, reduce nutrient leaching, and increase nutrient-use efficiency. Soil biology supports the release of up to 70 kg of nitrogen per hectare annually, reducing the need for expensive and emission-heavy synthetic fertilisers.

For livestock farmers, this translates into better feed conversion, reduced reliance on supplementary feed, and improved liveweight gains. It also reduces methane emissions at source, as higher-quality forage reduces the energy lost through enteric fermentation. Trials have shown that improved forage quality can reduce methane emissions from enteric fermentation by up to 17% while supporting better daily weight gain.

Healthier soils reduce worm burdens and hoof problems by improving drainage and structure. The result? Fewer vet bills and more consistent productivity.

Across the farm system, the savings add up:

- Lower artificial fertiliser costs, as nutrients are recycled more effectively.
- Reduced supplementary feed requirements.
- Fewer inputs to treat disease or manage compaction.
- Better water infiltration and drought resilience.

Now consider the arable system. Soil structure and biology play a similar role in boosting margins. Improving soil organic matter through reduced tillage and cover cropping can increase yields by up to 10%, while reducing diesel use and improving machinery workability.

Better soil structure enables more even germination, fewer compaction-related losses, and more resilient crops during dry spells. Integrating legumes into rotation can fix up to 150 kg of nitrogen per hectare, dramatically reducing synthetic fertiliser use.

Farmers adopting cover crops and reduced tillage on UK arable land have reported input savings of £60-£90/ha, alongside improved soil resilience and yield stability.

Understanding the Linkages: Soil, Plant, Animal, Profit

Let's take a concrete example. A farm with improved soil biology – supported by diverse swards, minimal disturbance, and cover cropping – builds soil carbon. This carbon stores water, buffers against pH swings, and creates a habitat for fungi and bacteria that unlock nitrogen and phosphorus from the soil profile.

Grass grown in this context tends to have better mineral content, higher sugar levels and improved digestibility. Animals grazing it convert forage more efficiently into meat or milk. Methane intensity per kg of output goes down. Feed inputs can be lowered without compromising performance. Animal health improves due to better trace element availability and reduced stress.

The science supports it. High-WSC (water-soluble carbohydrate) grasses improve rumen fermentation and nitrogen-use efficiency, while better pasture mineral content improves immune function. Reduced stress and more consistent nutrition lower disease incidence.

In arable systems, the principle holds. Soil biology improves root development and nutrient availability. That means more even establishment, stronger crop competition with weeds, and lower pesticide needs. A well-functioning soil food web can supply up to 60% of a cereal crop's nitrogen needs and reduce phosphate requirements by mobilising legacy P from the soil bank.

Cover cropping with species like radish, vetch, and phacelia not only protects soil but primes it with biological activity. Fields following multi-species cover crops often show better yield stability, higher soil carbon, and reduced run-off.

This is natural capital in action. Not

a theory, not a market commodity, but a system of living assets quietly delivering commercial value.

Sandy: A Tool to Quantify and Optimise

While many farmers already work intuitively with nature, new technologies are emerging to quantify these benefits and support decision-making. Sandy, the natural capital navigation and intelligence platform developed by Trinity AgTech, helps farmers understand how their soils, habitats, and farm management choices affect both environmental outcomes and financial performance.

Using Sandy, farmers can:

- Assess how soil carbon and biology affect grass growth and feed quality.
- Model the effect of management changes (e.g. reduced tillage, herbal leys) on soil function and nutrient use.
- Understand how improved forage quality impacts livestock emissions and feed costs.
- Track improvements in animal welfare linked to better natural asset function.
- Calculate the nutrient and cost benefits of integrating legumes or cover crops.
- Quantify financial opportunities and risks associated with changing practises

This level of insight supports practical, everyday decisions: which fields are most cost-effective to reseed? Where is soil function limiting productivity? Which interventions deliver the best return on investment?

The platform is built on peer-reviewed science, aligned with UK and international standards, and trusted by farmers and supply chain partners alike. It connects nature-based decisions directly to profitability.

A Foundation for Resilience

Can your farm evolve to thrive through extremes? Natural capital is also your farm's insurance policy. Fields that hold water better are less vulnerable to drought. Pastures with diverse root systems recover faster after stress. Soils rich in organic matter are more resilient to compaction and erosion. In the face of climate extremes and

market volatility, the farm with healthy natural systems is the farm that adapts.

What if you had a clear map of how your land stands-up to drought, flooding, rising costs and market volatility?

By managing natural capital proactively, farmers increase not just yields, but consistency. They reduce their dependence on expensive external inputs. They lower environmental risks. And they build a business that can thrive under future regulation and consumer scrutiny.

And Yes, Markets Will Come

Once a farm has a clear understanding of the value and function of its natural capital, opportunities for new income streams follow. Carbon markets, biodiversity net gain, water quality trading and supply chain premiums all require robust, credible data, backed by science-based evidence. Sandy helps generate that evidence – but the point is, the farm is already benefitting before any credit is sold.

Nature markets should be seen as a happy by-product of smart land management – not the starting point. The core driver should be the production of healthy, nutritious food alongside improved productivity, profitability, and resilience.

A Change of Mindset

This shift is not about turning farmers into ecologists or accountants. It's about extending what good farmers already do: observe, adapt, and improve. It's about treating soil, water, carbon and biodiversity not as externalities but as working parts of an inter-connected, nested system.

It's also about asking better questions:

- Where are my natural assets underperforming?
- What's the cost to my business of degraded soil or low-functioning pastures?
- What would it mean for my margins if I could reduce inputs by 10%?

Answering these questions doesn't require guesswork anymore. It requires tools like Sandy, good insights, and a willingness to see the full value of what the land provides.

In Summary

Your farm's natural capital isn't just an environmental concern. It's the foundation of your profitability. From soil structure to grass quality, from animal health to input costs, the function of natural systems determines the efficiency of your food production.

By understanding, measuring and improving these assets, farmers can:

- Reduce costs of production.
- Improve crop performance
- Improve animal performance and welfare.
- Increase resilience to climate and market shocks.
- Unlock new income in ecosystem service markets.

And all of this starts by recognising that your natural capital is not hidden at all. It's right under your feet.

To learn more about how Sandy can help you quantify and improve your farm's natural capital, visit www.trinityagtech.com

FARMER FOCUS
PHIL ROWBOTTOM

Dry Weather Challenges Across the Rotation

By Phil Rowbottom, for Direct Driller Magazine

It's fair to say that 2025 has been a year of extremes — and not in a good way. The dry spring and early summer have had a telling impact across every crop on the farm, and this season's challenges have tested both patience and the resilience of the soil. From the winter wheat to the spring oats, and even the usually tough cover crops like vetch and buckwheat, everything has felt the stress of prolonged dry spells.

Interestingly, we seem to be pioneering a new crop in West Yorkshire, the 30mph wheat.....looks great from the road when you drive past it, but very sparse when you're standing in it and can still see your boots — it tells a very different story!

We've always tried to farm with an eye on resilience, soil health and keeping diversity in the rotation. But when nature refuses to play ball, it puts all those strategies to the test. I wanted to share some thoughts and lessons from this season's experiences

— both good and bad — because I know I'm not the only one out there watching crops suffer under blue skies that just won't break.

Winter Wheat Under Stress

Our winter wheat went in well last autumn, drilled in good time into decent moisture, and we thought we were set up for a strong start.

The Sky Drill continues to deliver a cost effective, timely way of establishing crops, having upgraded from four to six metres, I very much look forward to being able to not only cover the ground a bit quicker, but reduce wheelings across the farm, further adding to soil health.

The crop was established well and I had a good feeling coming into the winter. But as the dry weather persisted through March and April, things started to change.

By late April, we were seeing clear signs of moisture stress. The plants were thinner, tillering was limited, and even though disease pressure was low, the crop just didn't have the energy to push on. Where we had heavier soils or areas with a bit more organic matter,

you could still see some potential, but the lighter ground has really suffered. It's a stark reminder of how crucial water retention is becoming.

One positive note is that the wheat has remained relatively clean. We managed to reduce fungicide spend without taking too much of a gamble and have reduced the nitrogen input from 220kg per hectare to 180kg across the wheat crop as a whole. The problem is yield potential — right now I expect to be 15–20% down compared to our five-year average, purely because of lack of moisture at key growth stages.

Spring Oats

I had high expectations of our spring oats being the answer to our break crop conundrum in the absence of OSR.

However, like the wheat, the oats have taken a hit this year, primarily due to the lack of moisture from when they were drilled. They went into dry seedbeds in March, and we held our breath hoping for some April rain that never really arrived.

Oats aren't a particularly deep-

rooted crop, and they rely on good early establishment to create enough canopy before heading. Not an overly tall crop, tillering has been minimal. Even with some late rain in June, it felt like too little, too late.

We've had to manage expectations and we won't of course know the outcome until we get the weighbridge ticket, but realistically, I'm predicting a yield drop on previous years. I can only hope that we don't need to run the drier this year to further add to the costs!

Cover Crops for Seed: Vetch and Buckwheat in Trouble

Due to the ever-increasing cost of cover crop seed, I decided it was worth trying to grow some vetch and buckwheat for seed. I was optimistic we'd have a half-decent crop given how both species have previously performed.

They're both fantastic species in their own right: vetch with its nitrogen-fixing abilities and biomass, buckwheat for its rapid growth and phosphate scavenging. But this year has shown that even hardy cover crop species aren't immune to prolonged dry conditions.

The vetch, sown in early April, never really got going in the dry conditions. As the drought dragged on, the plants remained stunted. Flowering was poor, and pod development was patchy at best.

The buckwheat, on the other hand, has fared a lot better.

Although not much of a crop in height, it's all there and should hopefully produce some seed. Of the two crops it appears to have been much more resilient to the dry conditions.

Biodiversity Boost: A Bright Spot in a Dry Year

Despite the struggles with crop performance, one real success this year has been the role that cover crops and pollinator flower strips have played in supporting on-farm biodiversity.

Even in the dry conditions, the perennial and early-sown strips have thrived in patches and delivered a massive benefit to pollinators — the bee population has exploded this season.

On warm mornings, the sound of buzzing across the farm has been unmistakable. It's a stark contrast to a decade ago, and a real motivator to keep going with habitat-focused margins.

But it's not just the bees. We've seen an increase in butterflies and the wider wildlife appears to be thriving.

The strips and cover crops aren't just ticking agri-environment boxes — they're making the whole farm feel alive. We've seen broods of grey partridges and even a breeding pair of red leggeds for the first time in memory! It reminded us that even when the yield maps look disappointing, the landscape can still be productive in other ways.

Lessons in Resilience

This season has been a stark reminder that soil is everything. Investing in organic matter, wildflower strips and maintaining cover cropping all seem to be helping soil health and resilience.

We're looking harder at moisture-conserving tactics. Straw retention and leaving stubbles slightly taller both seem to help with retaining water. If the weather is going to be more unpredictable, then every drop of moisture counts, and we've got to hold on to it for as long as we can.

There's also a question about crop choice. Spring oats might not yet be the answer, but they certainly seem a better gamble than OSR. However, it really is a balancing act between soil health goals and economic realities.

Looking Ahead

Despite the challenges, I remain optimistic. Every tough season gives you a clearer sense of where the weaknesses are in your system, and that's valuable information. We'll get the combine rolling soon, and I'll be going into harvest with realistic expectations, yet with an eye on what can be improved for next time. Just don't ask me how the grass is looking on the other side of the business — while we don't need any rain at harvest, the grass on the golf course is getting a bit desperate for a drink!

Let's hope the next season brings a bit more balance and not all the rain in one go as we've had in previous years!

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TOGETHER FOR A HEALTHY AGRICULTURE

Credit: AHDB

YELLOW RUST:
A SYMPTOM OF SYSTEMIC WEAKNESS IN CEREAL CROPPING SYSTEMS

By Tim Ashley, Edaphos Agronomy

Introduction

The 2025 wheat season has revealed significant vulnerabilities in cereal production systems across the UK. Yellow rust (Puccinia striiformis f. sp. tritici) has emerged as the most problematic disease of the year, affecting a wide range of wheat varieties, including those previously considered resistant. The widespread reliance on fungicides, particularly tebuconazole, has once again highlighted the tension between short-term disease control and long-term system resilience.

This article outlines how yellow rust pressure should be viewed not just as a pathology to be controlled, but as a symptom of wider systemic weakness in the soil-plant-environment continuum.

1. The Current Agronomic Response: Fungicide First

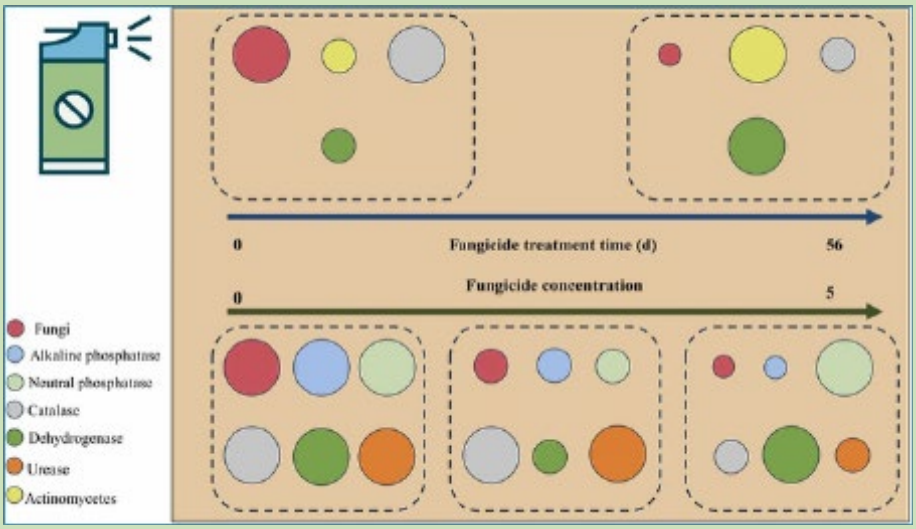
Tebuconazole, a triazole fungicide, remains a popular option due to its efficacy and low cost. A single application may cost around £5/ha, making it an attractive first-line response to yellow rust outbreaks. However, this reactive approach often leads to multiple applications throughout the season, compounding physiological and ecological side effects.

2. Physiological Effects of Tebuconazole

Tebuconazole is known to act as a mild plant growth regulator by inhibiting gibberellin biosynthesis. Under normal conditions, this can help reduce lodging by shortening stem internodes. However, under drought stress, it may suppress elongation and reduce canopy development, especially if applied at stem extension (GS30-32).

Studies have reported reduced root elongation and deformation of root apices in wheat following tebuconazole exposure (Shishatskaya et al., 2018). Such suppression is particularly problematic in dry conditions, where root depth and function are critical for moisture and nutrient uptake.

Additionally, triazoles can negatively affect urease enzyme activity in soil, potentially delaying the conversion of urea to ammonium (Kobyłecka et al., 2015). This interaction is especially concerning when urea-based fertilisers are applied early in the season and require microbial conversion during



Credit: Kobyłecka, E., et al. (2015). Effects of Fungicides on Urease Activity in Soil

periods of water stress.

3. Soil Biological Disruption

Beyond plant physiology, tebuconazole can impact soil microbial communities. It has been shown to suppress populations of urease-producing microbes and reduce the activity of enzymes such as dehydrogenase and phosphatases (Zhang et al., 2018). This disruption may impair nitrogen cycling and nutrient mineralisation, particularly in biologically fragile soils.

Of particular concern is the documented inhibition of arbuscular mycorrhizal (AM) fungi, which are crucial for phosphorus uptake, water efficiency, and overall plant resilience (van der Heijden et al., 2008). Triazoles, while not specifically targeted at AM fungi, can reduce fungal colonisation and alter microbial balance.

4. Rethinking Disease as a Signal, Not Just a Threat

Yellow rust outbreaks should prompt a systems-level diagnosis. Repeated chemical control indicates an underlying failure in crop resilience.

Key contributing factors include:

- Genetic susceptibility or erosion of varietal resistance
- Nutritional imbalances, particularly low magnesium, manganese, or silicon
- Soil compaction, low organic matter, or disrupted microbiomes
- Inefficient nitrogen use due to delayed conversion or drought-stressed uptake

A systems agronomic approach asks: why is the pathogen succeeding? What plant or environmental weaknesses is it exploiting?

5. Predictive Tools and Proactive Strategies

Technologies such as the Cordulus Farm app now allow growers and advisers to predict yellow rust pressure based on real-time local weather data. Forecasting leaf wetness periods, temperature ranges, and humidity conditions enables more precise timing of interventions.

Rather than reacting to visible symptoms, growers can apply:

- Protectant fungicides (e.g. azoxystrobin) before infection establishes
- Biostimulants such as seaweed extracts, fulvic acids, or amino acid-based products to enhance stress tolerance and immune function
- Nutritional support (e.g. manganese, zinc, silicon) to strengthen the plant's physiological defences

Credit: Cordulus.com

6. Toward Resilient Cropping Systems

The over-reliance on curative fungicides is indicative of a system under stress. A truly resilient cropping strategy integrates the following components:

- Improved soil structure and active carbon flow to support root development
- Balanced nutrition through mineral and microbial inputs
- Greater varietal diversity with both vertical and horizontal resistance
- Biological buffering through cover crops, composts, and reduced tillage

Yellow rust, when it appears, should be used as a diagnostic indicator rather than a seasonal inconvenience.

Conclusion

Tebuconazole remains a useful tool in the agronomic toolbox. But its repeated use under high disease pressure reflects a deeper systemic issue. Rather than focusing solely on chemistry, the goal should be to reduce the crop's susceptibility in the first place.

Yellow rust offers a highly visible reminder that we need to design systems that are not only productive, but robust. Through integrated management of soil biology, plant health, and predictive technologies, it is possible to reduce dependency on reactive inputs and build cropping systems that can withstand the pressures of a changing climate and evolving disease landscape.

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REGULATION OF BIO-STIMULANTS, BIO-FERTILISERS AND BIO-PESTICIDES

Written by Susan Wilson from Aphaeas Agriculture

Bio-stimulants, soil conditioners, bio-fertilisers and bio-pesticides have been key features of the move away from high level usage of conventional chemicals and fertilisers and are now mainstream – yet the market is still largely unregulated. This is an attempt to clarify the situation we find ourselves in.

The use of biologicals in Plant Protection Products was well covered in Issue 32 by Dr. Minshad Ansari of the World BioProtection Forum, so I will not cover this topic again. However, I would like to make the point that there is at least some legislation in place, which protects the integrity of the products and is to the advantage of all.

Bio-stimulants: EU Legislation

On 25th June 2019, the European Union published new fertiliser legislation covering the use of bio-stimulants and which is known as Regulation (EU) 2019/1009. This directive amended previous regulations (EC) 1069/2009 and (EC) 1107/2009 and repealed (EC) 2003/2003, with the aim of creating a standard framework of reference across 34 countries. The implementation timeline was 3 years, allowing manufacturers time to complete the registration process. The deadline of July 2022 has since passed and it was disappointing that the UK government chose not to implement this legislation, which protects producers and consumers alike. However, ADAS is currently reviewing this but until then, the market in the UK remains a free-for-all, with many products of dubious origin (and questionable benefits) available for purchase.

It is imperative that the industry is properly policed as it has been the recipient of bad press on occasion, which has not been entirely unjustified. The new legislation, actively promoted by the European Biostimulant Industry Council, sought to prevent further abuse and eliminate the "snake oil salesmen". Worldwide, the biostimulant market is expected to be of the region of US$4.5 billion in 2025, with the market continuing to grow. Some sort of oversight in the UK would be welcome.

Despite this, it is worth bearing in mind the rationale behind the EU regulations and assume that at some point the UK will introduce similar legislation. When, is another matter entirely.

Clarity and traceability should only be welcomed and from July 2022 (in the EU at least), anything classed as a bio-stimulant must be approved and registered. The registration process includes proof of efficacy with new labelling standards to include full and accurate analysis and displaying the CE Mark where appropriate. Even without a regulatory framework, many manufacturers in the UK require the registration certificates, as well as REACH and CAS numbers, in order to meet their own compliance standards. For companies who sell back into the EU and other markets, these certificates are legal requirements. This is only as it should be where food production is concerned and batch numbers and expiry dates are standard for full traceability.

As per the legislation, biostimulants are now recognised as an agricultural input in their own right, with clear demarcation between abiotic (Fertilising Products Regulations) and biotic (Pesticide Legislation) products. Therefore, any product containing beneficial bacteria and fungi will now come under plant protection legislation. However, the exception to the rule is for products containing phosphite, a recognised fungicide, and which are frequently marketed as biostimulants; this is no longer be allowed under the new rules and they must comply with PPP legislation.

The legislation is comprehensive and the definition of a Plant Biostimulant is as follows:

- A Plant Biostimulant shall be an EU fertilising product the function of which is to stimulate plant nutrition processes independently of the products' nutrient content with the sole aim of improving one or more of the following characteristics of the plant or the plant rhizosphere.

a) Nutrient use efficiency

b) Tolerance to abiotic stress - plants

c) Quality traits

d) Availability of confined nutrients in soil or rhizosphere - Soil

When assessing products, the first question should always be: "What is it?" The label should be clear and inform the

user exactly what the ingredients are, showing a typical analysis. In addition, information regarding the method of analysis (and standard used) should be available. For instance, many EU products are analysed according to ISO 19822 as approved by the HPTA (Humic Products Trade Association), AAPFCO (Association of America Plant Food Control Officials) and the IHSS (International Humic Substances Society). This is important information to have, particularly when comparing products, as not all laboratories / methods / standards are equal. There are many products on the market that are not properly labelled.

The second question to ask should be: "What does it do?" There can be no more vague claims about benefits, especially when you don't know what the active ingredient is. The benefits of humic acids (i.e. humates and fulvates) are well established, but some products are better than others and it is always helpful to know the source and concentration; solubility can be an issue with poorer quality products.

It is of concern that certain practitioners continue to peddle flawed science and while BASIS and other bodies such as AICC do an excellent job in regulating advisors, it is difficult to completely control this aspect of the industry.

In the meantime, read the label carefully!

Useful link to the legislation: **https://eur-lex.europa.eu/eli/reg/2019/1009/oj**

Bio-fertilisers

This sector of the industry is completely unregulated and there are many challenges to assessing the effectiveness of bio-fertilisers. This is less of a problem for bio-pesticides, which are carefully regulated. Not all microbial products claim PPP benefits, which means that they fall between the two categories and there is currently no legislation covering their use, either in the UK or the EU.

Bio-fertilisers are not fertilisers per se, but products that contain bacteria and/or fungi and which aim to increase the availability of nutrients from the soil. However, results are very unpredictable and inconsistent, which makes assessment difficult and many products have failed to deliver on potential. Some inoculants such as mycorrhiza and rhizobia are well understood and done well, seed treatments can be effective, delivering consistent results. Use of inoculants should be aimed at addressing a particular problem or limitation and seed must be treated as close to sowing as possible. Inoculants tend not to spread from the application site and often persist only as long as the function is required. However, many products that are successful in greenhouse trials fail once put to the test in the field. This is not surprising, because field conditions are largely uncontrollable and unfavourable soil conditions must be managed first. Fungi, in particular, are lost during cultivation and they tend to survive in soils that are not disturbed.

Generally speaking, single strain species have poor longevity and multi-strain microbes are considered to be more effective, with beneficial properties often strain dependent. However, poly-microbial products make very general claims and quality control is an issue.

Up to 90% of microbes can be lost during application and they have to establish and compete with resident microbial communities, which can be vulnerable to introduced species. Some countries, such as New Zealand (and some South American countries) rightly forbid the application of non-native microbes. Indigenous microbial populations should be protected and one should bear in mind the potential consequences of introducing non-native and potentially invasive species.

Research suggests that good management of the resident soil microbiome has more potential and maintains the desired functions of the soil. As with bio-stimulants, the lack of regulation is concerning and farmers should be wary of purchasing expensive microbial products for soil application.

Reference

Soil Use and Management DRAFT REVIEW **Soil microbial inoculants for sustainable agriculture: Limitations and opportunities** Authors: O'Callaghan, Maureen; AgResearch Ltd Lincoln Research Centre; Ballard, Ross; South Australian Research and Development Institute; Wright, David; AgResearch Ltd Lincoln Research Centre

AGROECOLOGICAL FARMING BOOSTS SOIL AND BIODIVERSITY BUT ECONOMIC BARRIERS REMAIN

Written by Rothamsted Research

Study of 17 English farms finds nature-friendly practices can support yields, but only modest schemes are financially viable without subsidies

A major four-year study across English farms has found that nature-friendly agroecological practices can enhance biodiversity and boost some crop yields, but high costs and land-use trade-offs mean most approaches remain financially unviable without government support.

The research, conducted on 17 commercial arable farms in England, tested how far farmers could reduce their reliance on agrochemicals by using ecological interventions such as wildflower margins, cover crops, and soil enrichment to restore nature's regulating services—like pollination and pest control.

Farms trialled three systems: standard "business-as-usual" (BAU) methods; an "Enhancing Ecosystem Services" (Enhancing-ES) approach using margins and cover crops; and a more ambitious "Maximising-ES" model that added soil organic matter and in-field strips to attract beneficial insects directly into crop zones.

The results were striking. Soils under the Maximising-ES system showed the greatest carbon gains, and both ecological systems saw increases in earthworm populations and beneficial predatory and pollinating insects. Pollination and pest control services improved significantly, and pest snail biomass dropped in the ecologically managed plots.

Cereals and oilseed rape yields also rose under these nature-based systems. However, the financial picture was less positive. The higher yields failed to compensate for the land taken out of production and the upfront costs of ecological enhancements. Only the moderate Enhancing-ES system broke even—and only with agri-environmental subsidy support.

UKCEH ecologist Dr Ben Woodcock, who led the study, published in the Journal of Applied Ecology, explained, "Without the introduction of new financial incentives, many farmers will be deterred from adopting agroecological farming practices and systems. This could leave them locked into high input, intensive farming systems and more exposed to the impacts of pesticide resistance, declining soil health and climate change.

Trialling agroecological methods

Scientists at UKCEH and Rothamsted worked with farmers to co-develop the trials using simple management practices within three different agricultural systems on each of the farms:

1) Business-as-usual – typical intensive agriculture and no nature-friendly farming.
2) An 'enhanced' ecological farming system which involved planting wildflower field margins to provide habitat for bees, beetles and spiders, and sowing overwinter cover crops to capture carbon and retain nutrients in the soil.
3) A 'maximised' ecological system which added to the enhanced system by also planting in-field strips of wildflowers – 'stripey fields' – to provide 'runways' for beneficial insects to get further into crops, and the addition of organic matter in the form of farmyard manure to improve soil health.

Benefits for farmers and nature

The study found that in the enhanced and maximised ecological systems, there were increased populations of earthworms, pollinators such as bees and hoverflies, as well as natural predators of crop pests such as ladybirds, lacewings and spiders. This reduced populations of pest aphids and snails, and increased the seed numbers and thereby yield of flowering crops like oilseed rape.

There was also higher soil carbon and overall increased crop yields on the farmed area due to healthier soils, greater pollination and natural pest control. The study also found the enhanced ecological system was as profitable as intensive farming, but only due to agri-environmental subsidies.

While the various benefits for biodiversity, soil carbon and yield were greater in the maximised ecological system – which included planting in-field wildflower strips and buying in farmyard manure – the study found that the average farm would require increased subsidies to make it as profitable as intensive farming. Though the additional cost can be offset in certain situations because, for example, mixed farms already have free and easy access to manure.

Our analysis has shown that realising these benefits will require additional support for farm businesses that currently operate on very narrow profit margins

"While farmers run businesses that need to be profitable, there is an increasing awareness that more sustainable systems can help 'future-proof' their farms in terms of soil health, less reliance on pesticides and climate change, said Woodcock.

"Agroecological methods are good for biodiversity, food security and, in the long-term, provide more secure farm incomes but habitats can take several years to establish, so agri-environment subsidies are essential to helping farmers transition to these more sustainable systems."

The study authors say demonstrating the effectiveness of agroecological practices to farmers could be a critical step breaking farmers free from 'intensification traps'.

Rothamsted's Professor Jonathan Storkey, one of the co-authors, said: "This study confirmed that managing land on farms for wildlife is not in direct conflict with food security but can support sustainable production by increasing yields and reducing pest pressure. These 'ecosystem services' could potentially substitute for chemical fertilisers and pesticides which negatively impact the environment.

"However, our analysis has shown that realising these benefits will require additional support for farm businesses that currently operate on very narrow profit margins. As input costs increase, however, these agroecological approaches may become more attractive."

ROTHAMSTED RESEARCH

FARMER FOCUS
JOHN FARRINGTON

It's been over a year since my last Direct Driller article and, since then, rather a lot has happened that is affecting all businesses, especially farming. I think there are opportunities out there if you are prepared to take on the challenge, but there is a lot of uncertainty in the industry and amongst farmers.

One positive has been that we did get our capital grant accepted earlier this year, so we will be improving some of the infrastructure around the farm which will help when we are left to farm without any support from the government. With such a dry spring and summer, it has been very noticeable where we don't have permanent water supplies on arable ground that is now into grass. A lot of 20 litre drums and IBCs have been carried around, so we look forward to cracking on with some of the work to improve this.

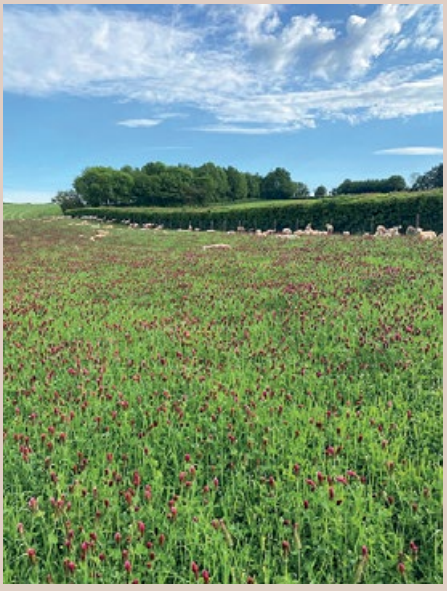
Last autumn, we got the cover crops and turnips planted in good time. Every single turnip seed must have germinated, so I had high hopes. But, unfortunately, there was a lot of leaf and not much turnip bulb. I did wonder whether this was due to competition as a high number of plants established. The seed rate was not that high, but from what I have heard from other farmers, it sounds like it was a common problem last winter: loads of leaf and small bulbs.

Wessex Water Zero Input Grass

To extend the winter grazing, we added westerwolds into our mixed species cover crops, which was a great addition. The other species produced a good amount of biomass that the sheep grazed off during the winter, the westerwolds were hidden in under the other species. After the initial grazing, the westerwolds then came into their own, providing a second grazing a month or so later. We then had a third grazing while ewes were lambing in early April before the field went into maize. On another field, we had a similar experience with multiple grazes and even a small cut of silage bales before going in with a late spring SFI option mix.

We were a bit tight with winter grazing, so the additional grazing off the westerwolds were very beneficial. We were also supplementing the turnips with additional bought-in fodder beet. Adding westerwolds will be repeated again this year, especially where later spring crops will follow.

The maize was established using a Grange Machinery Strip till perpetrator and then drilled with a normal maize drill on 50cm rows. I really like this method of growing maize, as a lot of the ground remains untouched, which hopefully will conserve moisture, especially in a spring like we've just had. The ground conditions will also be firmer. This will make easier travelling when it comes to harvest time in the autumn and will hopefully mean less ruts and compaction from the trailers. The maize has done well this year,



New Herbal Ley

Rotational Grazing Herbal Ley

despite the dry weather, and was knee-high by the 4th of July.

Other than a few war wounds from the wet winter in the usual places, the winter wheat looks good. Not sure where the yield will be, but it needs to be reasonable to help with the low prices. One block of wheat after maize did suffer more than the rest, and I couldn't look at it for the rest of the season, so it went in with spring barley.

Having direct drilled (with some low disturbance subsoiling) since 2018, after the maize was cut it then rained solid for three weeks. To try and dry the ground out to get the wheat established, we did run some tine and discs through in November. This turned out to be a mistake, with heavy rain following drilling, we ended up with gullies across the fields, which we hadn't seen since before we started direct drilling. To top it off, the wheat also didn't come to much and went to spring barley as mentioned.

We planted a new herbal Ley into worn out arable ground last autumn. It was slow to get going over winter but come mid-April it was flying. We were in the process of permanent fencing the perimeter of these fields and we didn't want to put ewes and lambs in there due to lots of footpath users and their dogs (they are now fenced out of the grazing area) so the herbal ley got away a bit. A lot of discussion was had as to whether it was too far forward, a waste for grazing with ewes and lambs and whether we should cut and bale instead. We ended up doing a half field of each, cutting half and grazing half in small sections on the same day. Once the sheep got into it they loved it. They trampled it quite a bit and it looked a mess but but this turned out to be a positive, as this trampled material protected the ground from the heat and provided a quicker regrowth than where it had been cut. We were certainly meeting the "eat a third, trample a third and leave a third criteria". The silage bales were bloody lovely, but we don't really have a need for silage as sheep are out all year. So sometimes, you have to think differently from "tidy farming", and next year, the ewes and lambs will be getting the best grub from the herbal leys before any goes into a silage bale.

Strip Till Established Maize

I appreciate a lot of the country has suffered badly from the very dry spring and early summer. We are fortunate to be in the SFI and I am pleased that I decided to reduce the spring cropping and opt for some of the SFI options instead, especially with the way crop prices have fallen and the dry weather continued.

These SFI and Mid-Tier schemes suit us quite well at the moment, but it is very concerning (from a financial and for wildlife point of view) what will be around the corner in around 18 months, when our schemes come to an end. We have been in some form of Environmental Stewardship for 25 years, and if there is no funding for this going forward then a lot will have to be taken out and go back into food production. If this is scaled up over the whole country, then the wildlife and nature will decline if the environment that they thrive on is removed from the system. But then the government don't seem to want home grown food either! So who knows where will things end up in a few years' time when the government actually decides what route they want farmers to take. They probably want to do away with us altogether; farmers have certainly taken a good beating from the government recently.

On that note, I hope everyone has a safe and good harvest with increasing prices to follow later in the year. Fingers

DRILL MANUFACTURERS IN FOCUS...

INNOVATION IN ACTION: HORIZON'S EXPANDING NO-TILL LINEUP

As the shift toward regenerative and low-disturbance farming continues to accelerate, Horizon Agricultural Machinery has remained at the forefront of equipment innovation. Based in Lincolnshire and exporting to over 30 countries, Horizon designs and manufactures quality, reliable machinery and components that address agronomic issues whilst at the same time increasing efficiency and productivity.

2025 marks another major milestone in our development, with the launch of three key innovations: the compact but capable 3m DSX, the high-output 9m MDSX, and RotorFlex — a precision peristaltic liquid pump developed by our sister company Regenovation. Each of these launches reflects our commitment to supporting regenerative agriculture through practical, forward-thinking technology.

The 3-4m DSX – Compact Capability Without Compromise

Developed in direct response to customer demand, the new 3-4m DSX brings the performance of our flagship trailed drill into a more compact, highly manoeuvrable format. Ideal for smaller farms or those with tight access and varied field sizes, the 3-4m DSX retains the same Gen 3 row unit used across our larger DSX platforms. With a 4000L 60/40 split hopper, an optional third 250L micro-granular hopper, and configurations to suit a wide range of cropping systems, the 3-4m DSX offers industry leading performance in a format better suited to more challenging terrain or transport restrictions.

Despite its compact frame, the drill is packed with the same advanced technology and modular design found across the DSX range. The 3-4m DSX is available in 3m or 4m working widths, and supports row spacings of 16.7cm, 18.75cm, 20cm and 25cm. We can also offer 560mm or 710mm rear flotation tyres, with an optional 750L rear mounted liquid nutrition tank.

3M MDSX

Perfectly suited to mixed farms, contractors with customers in hard-to-access areas, or anyone seeking true no-till capability in a compact drill, the 3m DSX is proving popular with customers, with several already in the field.

The 9m MDSX – High Output, Low Disturbance, Three-Point Mounted

9M MDSX

The MDSX platform has proved extremely popular since its launch, thanks to its combination of lightweight design, three-point linkage simplicity, and Horizon's proven Gen 3 row unit. Until now, the MDSX has only been available up to 6m wide — but 2025 sees the introduction of our new 7.5m, 8m, and 9m MDSX platform, expanding its appeal to large-scale farms and contractors looking for high-output drilling in a mounted format.

Despite its wide working widths, this new platform only requires 25hp per meter, and has a transport size of less than 3m wide and 4m tall thanks to a three section toolbar design. With the same frame modularity and row unit options as the rest of the MDSX line, our 7.5-9m version is fully configurable to meet a wide range of cropping and operating needs. It supports both 22cm and 25cm row spacings, and can be fitted with stabiliser wheels and wing weights. We also offer a weight transfer kit, which is able to transfer any weight from 0-1200kg directly from the tractor to the MDSX frame.

Like all MDSX drills, it can be used in combination with the Horizon FT2200, a pressurised 2200L hopper split 60/40 with dual metering systems. The frame supports a rear mounted GH400 hopper for microgranular products, or alternatively an optional rear mounted 750L liquid nutrition tank. Whether working in CTF systems, delayed drilling or across mixed field conditions, the 9m MDSX delivers the performance and customisability of a large trailed drill, with the manoeuvrability

and simplicity of a mounted platform.

RotorFlex – Precision Liquid Application, Made Simple

Developed by our sister company Regenovation, RotorFlex is a next-generation peristaltic pump system designed specifically with regenerative farming in mind.The robust peristaltic mechanism means RotorFlex is able to pump a wide variety of liquids, including highly viscous fluids such as molasses, or compost teas with particulates. RotorFlex requires no valves, seals or filters, is self priming and capable of running dry, and extremely accurate with repeatable flow rates that are very easy to control and calibrate.

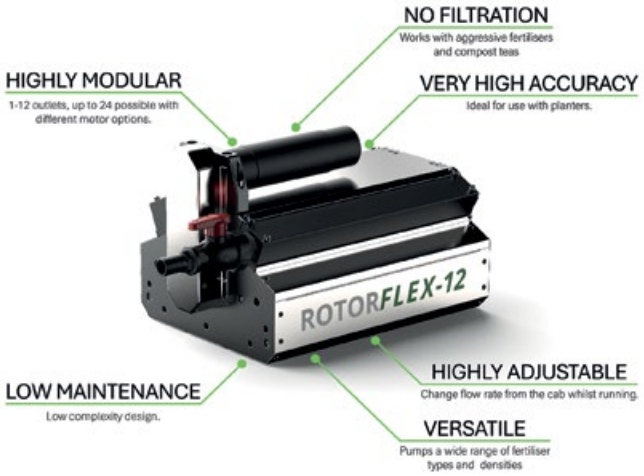
RotorFlex integrates seamlessly with Horizon machinery—including the DSX and MDSX platforms — and can also be used as a standalone system or retrofitted to third-party equipment. Its compact size, modular design, and easy-to-service layout make it ideal for farmers looking to introduce or expand liquid inputs into their cropping system without adding complexity.

Looking Ahead

As Horizon continues to grow, our focus remains on delivering practical, performance-driven solutions for farmers who are looking to improve their soils, boost efficiency, and future-proof their operations.

Whether through our DSX and MDSX no-till drills, PPX precision planters, SPX strip till cultivators or upcoming innovations, we are committed to developing equipment that reflects real-world farming needs, supported by expert service and an expanding global dealer network.

To learn more about Horizon products or to arrange a demonstration, visit www.horizonagriculture.com or contact your local dealer.



CAN YOU AFFORD NOT TO...?

Written by James Warne from Soil First Farming

With harvest well under way in parts of the country we, once again, are thinking about autumn establishment. With commodity prices under pressure, and support measures falling away, what are you doing to cut cost and attempt to maintain profitability. Being a soil consultant, I am always going to argue that the soil is the basis of your business. Allowing the soil to function from a fertility, and water management, perspective are critical to a profitable farm business. That is why I believe that employing a soil management system, or at least elements of it, is very important. A system such as Conservation Agriculture.

Conservation agriculture (CA) has emerged as one of the most cost-effective forms of crop establishment in the UK, especially in light of increasing economic and environmental pressures on farmers. At its core, conservation agriculture is defined by three main principles: minimal soil disturbance (no-till or reduced tillage), permanent soil cover (using crop residues or cover crops), and crop rotation. This sustainable approach not only addresses environmental concerns but also significantly reduces operational costs, making it an attractive option for UK farmers aiming to enhance profitability while maintaining soil health and long-term productivity.

Reduced Input and Operational Costs

One of the most compelling reasons why conservation agriculture is considered cost-effective is the significant reduction in input and operational costs. Traditional tillage methods involve multiple passes with heavy machinery, consuming large amounts of fuel and contributing to equipment wear and tear. These operations often require substantial labour, particularly during peak planting and harvesting seasons. By contrast, CA methods—especially no-till or minimum-till systems—reduce the number of field operations required, thereby cutting down on diesel usage, labour, and machinery maintenance costs.

For example, a conventional plough-based system may involve several sequential operations: ploughing, cultivating, drilling, and rolling. Each of these steps incurs costs in terms of fuel, time, and equipment usage. In contrast, conservation agriculture can reduce these to a single pass with a direct drill, achieving both seed placement and soil protection in one go. Studies in the UK suggest that farmers can save between £60 and £100 per hectare by adopting direct drilling compared to plough-based systems.

Improved Soil Structure and Health

Healthy soils are fundamental to productive agriculture. Conservation agriculture promotes the buildup of organic matter, enhances soil structure, and improves water infiltration and retention. Over time, this reduces the need for expensive soil amendments and irrigation, further contributing to cost savings. In the UK, where soil erosion and compaction are significant issues—particularly on heavier clay soils—CA helps maintain better soil porosity and prevents degradation, which would otherwise necessitate costly interventions.

Enhanced soil biology under CA also contributes to nutrient cycling, meaning farmers may be able to reduce their reliance on synthetic fertilisers over time. This is particularly relevant as fertiliser prices remain volatile and subject to global supply disruptions. Healthier

soils with improved microbial activity and root systems can access nutrients more efficiently, lowering the overall nutrient input requirement.

Weather Resilience and Reduced Risk

Conservation agriculture offers increased resilience against the UK's increasingly unpredictable weather patterns. Soils managed under CA tend to be more stable and better able to withstand heavy rainfall, reducing the risk of waterlogging and erosion. In dry periods, the moisture-retaining capabilities of residue-covered soils can sustain crops better than those in bare, tilled fields. This resilience reduces the risk of crop failure or yield reduction, which in turn lowers the

financial risk for farmers.

Weather-related delays in fieldwork, which are common in traditional tillage systems, can also be mitigated under CA. For instance, the ability to plant directly into stubble or cover crops allows for quicker responses to short planting windows. This timeliness is particularly important for maximising yields, and reduced delay equates to greater efficiency and reduced financial loss.

Long-Term Economic Sustainability

While the initial transition to conservation agriculture may require investment in new equipment, such as direct drills, these costs are generally offset over time by lower variable costs and more consistent yields. Moreover, investment in new drills may not be required, quite often it is possible to adapt and utilise existing kit.

Over time, the cumulative benefits of improved soil health, reduced input costs, and enhanced crop resilience lead to a more sustainable and predictable farming system. This long-term economic stability is especially valuable in the volatile market conditions of modern agriculture, where input costs and commodity prices can fluctuate dramatically.

Environmental and Market Advantages

Beyond direct economic benefits, CA offers advantages in environmental stewardship, which is increasingly linked to market access and subsidies. Reducing greenhouse gas emissions from fewer machinery operations and promoting carbon sequestration in soils can help UK farmers meet carbon reduction targets. Additionally, retailers and consumers are placing growing emphasis on sustainable sourcing, which may translate into price premiums or preferential contracts for CA-grown produce.

In the UK context, conservation agriculture represents the most cost-effective form of crop establishment when viewed through both short-term savings and long-term sustainability. By reducing operational inputs, improving soil health, increasing climate resilience, and aligning with environmental policy incentives, CA offers a viable path for farmers to maintain productivity while securing financial viability. As farming faces increasing pressures from climate change, regulatory shifts, and economic uncertainty, conservation agriculture provides a practical, profitable, and forward-thinking solution for crop establishment in the UK. There are elements of CA that should be considered between harvest and autumn drilling, such as cover crops for sunshine capture and conversion to 'liquid carbon' which feeds the soil. Never miss an opportunity to capture sunshine.

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