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How choosing the right variety and matching the correct agronomy programme to it can deliver significant gains on the bottom line

Delivering the highest margins on-farm increasingly involves a deep understanding of the relationship between the core characteristics of varieties grown and the most appropriate agronomy programmes, says Agrii technical seed manager John Miles.

Breeders have made major strides forward in developing greater levels of septoria resistance but we have taken a step backwards on brown rust and have had new races of yellow rust to contend with this year, he points out.

"Septoria is the disease that costs big money, so to have improvements is great. Rust may be cheaper to control, but it cycles quickly in the right conditions and means we need to 'mind the gaps' in season between applications. Keeping it out is easier than chasing it out with today's chemistry.

"The balance lies in understanding how genetics and the season play out and how we can tweak the agronomy accordingly to deliver the best results economically and in the field.

"The cleanest varieties are the ones that can be grown the most cost-effectively like Fitzroy, but every year will be different.

"This balance has been a major objective of our R&D drive in recent years, which is why we feel so passionately about the role of Fitzroy and the resistance package it brings."

Agrii works closely with breeders to evaluate varieties and their response to a range of inputs with the aim of identifying the optimum combination of genetics and chemistry across a range of varying production scenarios, he explains.

"It's an age-old story. Simply relying on varieties to provide disease resistance can come unstuck and put undue pressure on the genetics and reduce their long-term viability, while over-reliance on any one active ingredient in agronomy programmes can lead to problems with their effectiveness long-term."

Achieving the right balance

But with the right knowledge both genetics and fungicides can be balanced to provide the best level of protection in a sustainable manner for many years, he stresses.

"In high disease years the best genetics plus high inputs can provide maximum protection, whereas in lower disease scenarios, products and doses can be adjusted and application windows extended without compromising the genetics.

"Equally, strong genetics can buy you time with spray applications in challenging years and give you a degree of management flexibility that would be difficult to achieve with lower disease resistance scores or greater vulnerability to lodging."

John and the team have also been investigating the role of biological products, such as biostimulants, elicitors, and endophytes, and their interactions with different varieties.

"What we've found so far is, biologicals aren't conventional crop protection,

therefore expectations should be managed. They do work well but like lower dose crop protection approaches, it depends on disease pressure levels," he stresses.

"If the goal is to replace a proportion of synthetic inputs with biologicals, then you can do that but the variety must have robust resistance scores. It's all relative.

"Identifying the end goal is key, whether it's reducing synthetic input use or using more biological products due to the wishes of farm owners or supply chain requirements, but it can be done successfully.

"It is a really new field of experimentation. Eliciting a strong response in the plant requires a happy plant, but you have to be really in tune with crop health to get the best out of them."

Timing is critical

Agrii technical manager for combinable crops, Jodie Littleford, says the correct fungicide programme matched to variety requirements undoubtedly has much to offer growers, but timings have to be spot on to achieve optimum results even when you're using the best chemistry.

"Yellow rust has the potential to cycle every 7-10 days in the right conditions, and given the YR15 breakdown there are a lot of varieties which are now susceptible to this disease. In Agrii trials, a delay in T2 applications has shown a yield penalty of up to 1.07t/ha.

"Even where yellow rust isn't the main concern and septoria is still the focus, where T2s have been delayed we've seen yields drop by 0.79t/ha. Though septoria cycles slower than yellow rust, we still see susceptible varieties struggle to maintain yields where gaps are stretched.

"Fungicide timings generally shouldn't be pushed more than 3-4 weeks to ensure new leaf layers are adequately protected and the chemistry is topped up to maintain persistency.

"Stretching this window allows disease to become established and puts fungicides on the backfoot where they lack curative or eradicant activity."

Crop protection programmes

Trials during the high disease pressures of 2024 at Agrii's West Lutton trials site have highlighted the importance of variety response in the overall equation, she points out.

"With KWS Extase, for example, we saw an untreated yield of 8.31t/ha which increased to 11.01t/ha – a 2.7t/ha improvement – when a relatively strong agronomy programme was used, representing a £373/ha lift in margin over input costs (MOIC).

"This was driven by septoria, the flag leaf of untreated plants showing symptoms at the % level while leaf three in July was 63% dead. Extase has degraded in its rating over recent seasons, and this was a wet year.

"Switching out the T0 and T1 for a biological approach on this variety saw yield drop down to 10.69t/ha with a knock-on decrease in MOIC to £348/ha over untreated.

"There was still Septoria on L3, double that of the full fungicide, with 38% infected, leaf 2 had a trace and the flag leaf was nearly clean. It had the CP later on when it really mattered but was cleaner lower down.

"On a more resistant variety like RGT Hexton, however, the strong agronomy programme lifted a similar untreated yield of 8.16t/ha to 12.28t/ha – a significantly higher gain of 4.68t/ha resulting in an improved MOIC of £643/ha.

"This was also due to septoria but only at the 23% coverage of leaf 3 in July, but in a variety with higher yield potential.

"Where the biological T0 and T1 approach was used the crop produced a yield of 12.13t/ha, but with a marginally better MOIC of £650/ha due to differences in input costs.

"This both underlines the significant contribution the right agronomy programme can make to crop profitability but also the need for specific insight into matching chemistry and variety accurately."

Biostimulant benefits

The additional value the right biostimulant choice and adjuvant use can create has also been highlighted in recent Agrii trials, she adds.

"Trials at Carnoustie in Scotland have shown cost-effective fungicide programmes delivering yield improvements of over 1.3t/ha with a further 0.33t/ha average gain added by using the biostimulant Innocul8.

"Adjuvants have also shown yield improvements of 0.43t/ha worth an additional £82/ha in MOIC.

"The bottom line is by matching programmes accurately to variety, using new actives judiciously, being open minded about the best biostimulants and investing in adjuvants to get the most value from the products you're applying, your agronomy inputs can have a massive effect on the bottom line and give vital protection to your investment in genetics at the same time," she concludes.

Agri intelligence

John Miles
Technical Seed Manager

Jodie Littleford
Technical Manager for Combinable Crops

Variable rate nitrogen applications could help offset upcoming fertiliser taxation

The new carbon border adjustment mechanism (CBAM) tax, which is expected to add £50-£75 per tonne to nitrogen prices, is less than a year away. But it is likely to be felt this year, since the EU implemented its CBAM tax, which accounts for most of the UK's nitrogen fertiliser imports.

"We could see £40/t added to fertiliser prices this spring because of CBAM's implementation in the EU, which isn't ideal considering the current grain prices and that nitrogen is already at a high price," says Ben Foster, product manager for RHIZA.

He believes adopting variable rate nitrogen can readily generate the savings needed to offset any rise, and data from last year backs this up. "Variable rate nitrogen has been available for a long time. Some farmers have tried it and decided it wasn't for them, while others have the machinery capable of applying variable rate but have never tried it.

"There are now new tools available to farmers that make variable rate nitrogen cheaper, easier and more accurate. I'd encourage all farmers with the capability of variable rate spreading to look at the technology this season, at least in a trial area, to examine its results on their bottom line," urges Ben.

Examining data from combine yield mapping is a great starting point for justifying the need to customise nitrogen rates across a field, according to Ben. An increasing number of farmers now have access to yield maps, especially as older combines with this capability become available on the second-hand market.

"I'd recommend looking at the variation in satellite imagery from a platform like Contour in March or April, and overlaying it with historical yield maps. In my experience, the variation in spring satellite images will likely correlate very closely with yield data from the summer. This should give farmers the confidence to tweak late spring nitrogen applications to match field potential," says Ben.

Peter Cartwright, farms manager at Revesby Estate in Lincolnshire, made the move to variable rate nitrogen on his wheat crops last year after seeing its benefits during an Agrii digital technology farm trial. They had used variable rate nitrogen some years before, but gave it up because they lacked confidence in how to adjust the rates.

"In oilseed rape, it's straightforward because it's linked to the green area index," says Peter. "With wheat, we didn't know whether to push a backwards crop or hold back on it. We are still asking similar questions, but we have a better grasp of it with the information available to us.

"We have signed up for the variable rate SFI action and we are using it across the whole estate now."

The new CBAM tax, on top of high prices relative to grain values, has flipped the nitrogen equation, thinks Peter. Not long ago, the benefits of adding more nitrogen to maximise yields outweighed the risks of potentially spending too much. The financial cost for applying too much is far higher now, he adds.

Last season, they did not see a reduction in nitrogen use overall, but Peter says they used it more appropriately, pushing the more promising field areas and holding back on others. Looking ahead to this spring, with grain prices lower than a year before and nitrogen higher, he is looking for savings. "The economic viability of that last 10% of yield has changed," explains Peter.

The functionality for farmers to make this choice is available in Contour, says Ben. When choosing variable rate plans, farmers can choose between optimum yield and canopy levelling. Selecting optimum yield means the tool will favour better areas of the field with more nitrogen to maximise the yield potential there. Conversely, canopy levelling will increase nitrogen levels in areas with lower vegetative indices.

"There is no definitive answer to this," says Ben. "It is dependent on the season and the farmer's knowledge of the field. We are trying to build our understanding of this through the digital technology trials at Revesby Estate. Last season, they showed promising results from withholding nitrogen on the sandier areas of the trial field due to the dry weather.

With the increasing number of long, dry spells in recent springs, understanding variation in soil texture and underlying geology can be just as important for nitrogen applications, believes Ben. Soils with higher clay content or over chalk often show much better drought tolerance and therefore better yields, which supports higher nitrogen applications in drier seasons.

If farmers want to try variable-rate nitrogen this season, Ben says the Contour tool charges only for the areas where it is used.

"If you want to use it, we will unlock the tool for your whole farm. RHIZA recognises not every field will require variable rate nitrogen and as such offers a pay-as-you-go approach to planning, meaning whilst the tool is accessible across the whole farm, you'll only be charged for the hectares that the system produces a plan for," he concludes.

Tackling large cover crops before spring drilling

Early harvest and timely rain in late July created the opportunity to grow some of the biggest over winter cover crops in the past 15-20 years.

As always, there are exceptions. Those farmers who missed that first establishment window and drilled in mid to late August have crops with smaller canopies when the weather turned dry again.

"It is variable," Oxfordshire-based Agrii agronomist Iain Richards says. "There were good conditions for those able to drill in late July or early August, but others were delayed due to harvesting or lack of seed.

"Those later drilled cover crops drilled in mid-August haven't made as much growth as one would have thought."

Regardless of canopy size, terminating at least six weeks before drilling spring barley is important, says Agrii's conservation and regenerative liaison manager Steve Corbett.

"Our trials work shows there can be a serious effect on particularly spring barley yields following some species of cover crops," he says. "So the biomass needs to be gone and the plants dead before drilling."

That doesn't mean the cover crop will have no benefit after termination, he stresses. "The root structure of the cover crop will still benefit soil structure and water infiltration."

Where growers have been growing cover crops and improving soil health and biology for several years, the need to terminate that far in advance could be reduced, he notes. "Some will have found that they can drill spring barley 'on the green' without a problem, but there are many more growers who won't be able to do that.

"The allopathic effect of the cover crop breaking down on the next crop is serious, with spring barley most fickle, while spring wheat and spring oats are more tolerant."

For those facing large biomass canopies, Steve recommends grazing or mechanical means to reduce canopy size before finishing off with glyphosate. "If the soil type is not too heavy and the ground isn't too wet, sheep are really useful."

A lot of Iain's customers' more forward cover crops were grazed before Christmas. "Make sure you give grazed crops enough time to recover and start regrowing before finishing off with glyphosate," he warns.

An alternative to sheep could be either rolling on a frost or cutting down with a knife-roller type machine, Steve suggests. The latter could be particularly helpful in dealing with woody material, such as radishes and mustards that have already flowered and set seed.

"Using a knife-roller will allow the debris to die off and expose what is underneath to allow for just one hit of glyphosate."

Where growers are using glyphosate, the choice of glyphosate product, application rate, adjuvants, and/or water conditioner is essential to ensure the cover crop is destroyed as required, advises Agrii field operations specialist Gary Lander. Adjuvants can significantly reduce drift and, along with water conditioners, improve the speed of action.

Farmers should also assess the nature of the cover crop before deciding on glyphosate product choice, says Gary.

"Cover crops with a significant percentage of broadleaf plants will need a two-spray approach to ensure kill of shaded grassweeds."

"The use of Kyleo (glyphosate + 2,4-D), where the addition of 2,4-D to glyphosate helps give a rapid kill of broadleaf plants and opens the canopy, may be advantageous. I would recommend the inclusion of an anti-drift adjuvant like Crusade with Kyleo."

That can then be followed with a straight glyphosate product, he says. "Water volume is also critical to give good coverage – 125-150 L/ha is usually optimal – while in all but the softest of water, the addition of a water conditioner such as H2Opti will significantly reduce lock up of the active substances, which can reduce efficacy.

"A combined adjuvant and water conditioner product like Newman's V7 is also very effective at improving the speed of activity."

In larger canopies, Gary says using angled nozzles, such as Lechler's IDTAs, can reduce shadowing with the larger droplets from the air inclusion nozzle resulting in better canopy penetration, reduced drift and more active hitting the target.

"The key is not just getting the glyphosate applied but considering the target and placing the glyphosate to deliver the optimum performance."

Check grass weed growth stages before application, Iain adds. "We know that grass weeds can be quite difficult to kill when they are in stem extension, which could be possible given the good growing conditions.

Steve Corbett examines soil structure after cover cropping

"It's important to check growth stages and make sure the dose is appropriate."

He advises against adding fulvic acid to glyphosate, despite its increasing popularity. "I know some growers like to use fulvic acid to mitigate against the potential negative effects on soil biology. However, my experience of looking at where glyphosate hasn't worked as well as it should have is that there have been far more problems where fulvic acid was used. It burns the top off the plant and doesn't translocate down to the base of the plant."

Where cover crop biomass has been reduced by grazing or chopping, lower glyphosate doses may be possible. Generally, the rate will be driven by the growth stage of any grass weeds, which, if they have been growing under a larger canopy, will likely be smaller, Iain says.

"Occasionally, I have seen small cover crops with well-tillered blackgrass that does need an appropriate dose of glyphosate."

Before drilling spring barley, check that the grass weeds have been controlled, particularly if no cultivation is planned. "It's not just blackgrass and Italian ryegrass; bromes are a big issue in spring barley as there is nothing to control them in the crop."

Termination of cover crops ahead of later-drilled spring crops, such as maize, offers a little more flexibility in termination dates. Farmers should also remain aware of the challenge of controlling grass weeds during stem extension and of allowing enough time for any planned cultivations, Iain concludes.

Plan carefully to get the most out of a spring reseed

By Adam Simper, Agrii National Grass, Roots and Environmental Seeds Manager

Time spent focusing on the precise requirements of grassland reseeding this spring will prove highly rewarding in the years ahead.

It's always tempting to try and get another year or so out of leys without having to reseed, but it will often impact negatively on production and profits in the medium to longer term. Weed species and less nutritious grasses can take over as a sward matures, and these can eat into both the palatability and productivity of grassland. It's only when you see analyses following a reseed that you realise the extent of the problem.

Reseeding and, where appropriate, overseeding can have an almost instant effect on D value, ME, protein and sugar content of grassland. This improved feed quality from both grazing and feeding the silage will, in turn, boost milk yield and increase daily live-weight gain from quality home-grown forage.

A sound assessment of which fields need to be reseeded or overseeded this spring will not only ensure livestock have access to the best home-grown forages over the coming season, but it will also save on money and inputs in the future.

Modern varieties are also much better at responding to nitrogen in the soil and from other sources. In some cases, you may need to apply less inorganic nitrogen or achieve better quality and yields from what you do use. Combined with inherently better feeding value, sticking with tired swards after the challenging growing conditions experienced in recent years could be a false economy.

Selecting the right grass seed mixture to suit your grassland regime is essential, and it's important to choose grass and clover varieties that have recently been added to the Grass and Clover Recommended List (RL). Such varieties have been proven to be the most reliable and productive and should always form the basis of any mix you choose.

Additionally, Agrii is careful to select only the best varieties, often working with individual breeders to capitalise on key characteristics such as cutting and grazing yields, D value, ground cover scores, disease resistance, and seasonal growth.

Full reseed benefits

Producers planning a full reseed this spring should start by ensuring the old sward is killed off with an application of a glyphosate-containing product before preparing the seedbed.

You should ensure there is sufficient new growth for the herbicide to be taken up and that an appropriate rate is applied under correct conditions. However, it is important to remember that while this treatment will control actively growing plants, it will not kill dormant weed seed in the soil.

Determining the soil pH, plus the P, K, and Mg indices, and then addressing any problems with these is also important. Soil sample to a depth of 15cm if ploughing or 7.5cm if only cultivating the surface.

Seedbed fertiliser should be applied as recommended, based on the soil sample results. Apply lime to achieve a pH of 6.5 at a maximum of 5 t/ha (2 t/acre), and split-dress if more is required. Applications of farmyard manure or fertiliser can correct any nutrient deficiencies.

Optimum seedbed preparation

Producing a firm but fine seedbed is the next priority.

Address any compaction or drainage issues within the field and clear any drainage ditches to ensure all outflows are working correctly.

Plough and press the land and work it down to prepare a fine seedbed, and drill or broadcast the seed onto the rolled seedbed to a depth of 1cm. If broadcasting, lightly harrow and then roll; if drilling, you can just roll to ensure maximum seed-to-soil contact. Rolling will also help to reduce moisture loss.

If significant weed problems are expected, opt for a mixture without clover to allow for herbicide use. You can then introduce the clover at a later date once a herbicide has been applied to the sward.

Remember, temperatures need to rise to achieve satisfactory germination and growth. Perennial ryegrass will not germinate until the average daily soil temperatures are above 5°C and for clovers it is above 8-10°C.

To determine when the reseed is ready to graze, pull the grass blades between your

thumb and forefinger. If the root system is pulled out, it is not ready; if the roots stay in the ground and the grass blades rip off, you can graze it periodically.

You can graze from 8-12cm down to 4-6cm, and this will encourage the plant to tiller out and help achieve a dense leafy sward. Gentle first grazing also allow sunlight to reach and stimulate the grass tiller buds and the clover's growing points.

Weed control in the new ley is usually necessary to ensure a good establishment and to avoid a gappy sward, so it's a good idea to consult your agronomist with regards to timings and applications of suitable herbicides.

Top tips for overseeding

Overseeding can be an option, as it is a simple but effective way to rejuvenate old or damaged grass leys without the cost implications of a complete reseed. It can be a very effective means of increasing yields and quality while avoiding ploughing and reducing the amount of time that home-grown grass forage is out of production.

Careful consideration is needed when choosing where to overseed. An open sward is needed, as a dense sward will be very hard to open out to allow the seeds to reach the soil so then a full reseed may be a better option.

Ensuring the mix is 100% tetraploids will result in greater establishment success than a mix containing diploids. Tetraploids are a bigger seed with more energy compared to diploids; this will help them to establish successfully against the competition from the existing grass.

Timing is imperative with overseeding. The aim is to minimise competition from the existing sward, so the best time to overseed is March, April, July or September as the grasses are not growing as vigorously then as they are in May and June.

Using a harrow-based approach, soil sampling and pH assessment are again essential, as is removing any excess cover by grazing hard or cutting.

Ideally, carry out two or even three passes with the harrow if you're tackling a really thick mat. This will help to remove all the dead grass and weed grasses and help to create an open sward for maximum seed to soil contact.

Seed can be applied using Einbock harrows or using a fertiliser spinner followed by rolling with a set of Cambridge rollers to get maximum seed-to-soil contact. Nitrogen fertiliser should not be applied until new seeds are well established.

You can establish when the pasture is ready for grazing using the same technique as for full reseeding.

Direct drilling and slot seeders

Another alternative for overseeding is using direct drill or slot seeders.

Follow the same preparation as with harrow use, then direct drill two ways to improve ground cover, being careful not to drill deeper than 1cm. Roll again with a set of Cambridge rollers to close the slot, or it can dry out very quickly or get waterlogged. Rolling will also ensure the all-important seed-to-soil contact.

You can then follow the same post-drilling procedures as with full reseeding and overseeding with the harrow approach.

Think carefully about what you want from your grassland, choose the best approach for your system, and invest in high-quality mixes using RL-approved varieties. You should find that rejuvenating your grassland this spring will be a sound long-term investment.

Adam Simper

National Grass, Roots & Environmental Seeds Manager

Private & public sector funding: building resilience into farm businesses

Farm profitability is increasingly shaped by factors beyond our direct control. Climate change, commodity prices, and shifting government policy all play significant roles in today's farming environment. With so much uncertainty, the key question becomes: what is within our control, and how can farm businesses build resilience to cope with these challenges?

These questions sit at the core of Agrii's Environmental Services division. A recent AHDB review identified 75 separate funding streams available to UK farmers, supported by a combination of public funding and private-sector investment. Our role is to help farmers understand and access funding opportunities that can support both profitability and long-term sustainability.

Government funding is familiar territory, but it continues to evolve. Schemes change, budgets are reallocated, and eligibility rules shift – all of which can make long-term planning difficult.

Alongside this, private-sector funding is growing rapidly, driven by businesses seeking to reduce their environmental impact or invest in sustainable supply chains. However, these schemes vary widely in structure, regulation and commitment, making them difficult to navigate.

Below, we explore some of the key private-sector funding options currently available and what they could offer farm businesses.

Soil carbon programmes

Soil carbon schemes have been widely discussed over the past four years. While still relatively new, they have matured significantly and now offer practical opportunities for many arable farms.

These programmes provide annual incentives for adopting practices that improve soil health and reduce emissions, such as reduced tillage and cover cropping. Funding typically comes from businesses looking to offset emissions or invest in sustainable agriculture.

Agrii works in partnership with Agreena, the largest soil carbon programme in Europe, to bring this opportunity to our customers.

Read a farmer case study here:

www.cpm-magazine.co.uk/rotations/a-simple-approach-to-the-carbon-economy

Pros

- Funding that works alongside food production
- Annual rolling contracts, offering flexibility to opt out
- No upfront costs, with commission taken only at the point of sale
- Can be stacked with SFI actions

Cons

- Payments can take time to be realised (often up to 12 months), which may impact cashflow
- Care is needed to avoid double funding – land in soil carbon schemes cannot be entered into sustainable grain contracts

Biodiversity net gain (BNG)

Biodiversity net gain is now a legal requirement for most developments in England. Developers must demonstrate a 10% net gain in biodiversity, often by working with landowners to create or enhance habitats off-site.

This presents an opportunity for farmers to receive long-term, stable payments in return for dedicating areas of land to biodiversity delivery.

Agrii partners with BioGains, which established the first habitat bank in England.

Learn more about BioGains here:

www.biodiversity-netgain.co.uk

Pros

- Long-term income stream, typically over 30 years
- Minimal management input required under some models, including the Agrii & BioGains approach

Cons

- Strict eligibility criteria, meaning BNG is not suitable for every farm
- Land must be managed in line with a habitat management plan, which can limit future flexibility

Sustainable grain contracts

Sustainable grain contracts are an evolving market, driven by food brands, retailers, millers and distillers aiming to reduce the environmental footprint of their supply chains.

While requirements vary, these schemes generally focus on lower emissions, improved soil health and better nutrient use efficiency. In return, growers receive a premium for grain produced under agreed practices, such as reduced soil disturbance or cover cropping.

Agrii currently offers sustainable grain contracts with Bunge and GB Seeds across wheat, barley and oats.

Find out more via our Tramlines Podcast:

www.agrii.co.uk/tramlines-podcast/season-5/episode-1

Pros

- Funding that supports continued food production
- Clear understanding of how and where environmental claims are made

Cons

- Can be complex to determine which scheme best fits your system
- Care is needed to avoid double funding

Making the numbers work

Understanding which revenue stream delivers the best return per hectare is increasingly important – and food production may not always be the most profitable option on every part of a field.

A good starting point is to review yield maps and field performance, identifying areas that consistently underperform due to issues such as waterlogging, shading or poor soil structure. From there, alternative options can be explored, whether that's an SFI action like winter bird food, or a private-sector scheme such as BNG.

How Agrii can help

Environmental funding is complex, fast-moving and highly farm-specific. Our Environmental Services team works alongside growers to identify the most suitable options, avoid double funding risks, and ensure schemes fit within the wider farm business.

If you would like to explore what funding opportunities could work for your farm, please speak to your local Agrii adviser or contact our Environmental Services team.

How land drainage can help farmers make the most of their land

David Stewart, from D T Stewart & Sons, discusses how a trustworthy, longstanding partnership with Agrii has ensured optimal drainage for farmers for over 30 years.

From drought to torrential rain, it's clear that extreme weather presents a significant challenge to farmland. However, with a potential payback period of 5 to 8 years, drainage services offer solutions to climate-related problems.

David Stewart of D T Stewart & Sons believes that spending money to improve the land they have provides better value for farmers than acquiring more land to grow their businesses.

Founded by his grandfather, David Stewart took over the family business 30 years ago, providing farmers with fencing and drainage services. Now, under the leadership of his son-in-law, Darren Cooper, the family business continues to support farmers in minimising crop risk.

With their customers based predominantly in the large vegetable growing area of Fife, drainage is vital for being able to harvest high-value crops in the autumn.

"We design drainage systems so they can be maintained. It's certainly a very good investment," says Mr Stewart. "You're far better spending money making the land you've got better, rather than just buying more."

Following the recent wet years, the business has become much busier; however, extreme downpours have compounded farmers' challenges and affected Mr Stewart's company.

"We've hardly had any rain this year. Yet the previous year, we had so much rain we couldn't even get on the fields. We considered closing our business down for a bit because we couldn't get anything done, however we managed to find enough work to get us through this difficult time."

When the weather is unpredictable, you need certainty in a reliable service and manufacturer, according to Mr Stewart. "You can't afford the costs of keeping machinery, and people stood still waiting," he says.

As a contractor, staying on the move and efficient is critical to getting through peak harvest time, and a reliable partner is essential to avoid unnecessary delays.

Working with Agrii for over three decades to source their piping, the partnership has been long-standing, providing reliability and being critical to the business.

"We don't purchase our materials from anybody else. We find it a first-class service headed up by Manager Jackie Thompson," says Mr Stewart.

Looking to the future, David has now passed the baton to his son-in-law and will continue to support farmers facing continual weather challenges.

Explore our tanks and drainage solution services: www.agrii.co.uk/our-services/farm-equipment/tanks-drainage-solutions

Heads-up for autumn 2026:

New winter wheat varieties

Arlington

(DSV; Marston X Skyfall)

DSV Arlington is a high-quality, hard Group 1 milling wheat variety. It is a potential replacement for Skyfall with improved disease resistance, especially against yellow rust. Like Skyfall, it has a low vernalisation requirement, short, stiff straw, relatively early maturity and resistance to orange wheat blossom midge (OWBM). Overall, it is an easy-to-manage variety that provides growers with a blend of good end-market quality and reliable in-field performance.

Sparkler

(Elsoms; Graham X LG Skyscraper)

Sparkler is a high-yielding Group 4 soft winter wheat variety with high yields – especially in the north – bold grain, high Hagberg Falling Number and a positive rating for distilling. It has a wide drilling window, including earlier sowing, tall but relatively stiff and medium maturity. Sparkler has an average disease profile but reasonable resistance against *Septoria tritici* and *Fusarium* ear blight. Not resistant OWBM.

LG Defiance

(Limagrain; KWS Exstase X Gleam)

LG Defiance was the second highest yielding hard feed wheat in Agrii's trials in 2025, outyielded only by KWS Aintree, which has much lower yellow rust resistance. It has an average specific weight, but its high untreated yields reflect good all-round disease that is better than most of the other candidates. It is best sown in the main drilling window and performs well on both heavy and light soils, and good as a second wheat. It is resistant to OWBM.

KWS Aintree

(KWS; KWS Kinetic X KWS Sabrum)

KWS Aintree was the highest-yielding winter wheat in both Agrii and AHDB trials in 2025. It has a bold grain and performs well in spite of the fact that its yellow rust resistance is effectively below minimum standards. Consequently, it is a high-input, high-output variety that will attract some growers. It is very consistent across years, regions and soil types, and trials suggest that it is a good second wheat. It has tall straw, reasonable standing ability, medium-early maturity and OWBM resistance.

LG Challenger

(Limagrain; (RGT Gravity X SY Insitor) X LG Skyscraper)

LG Challenger is a hard winter feed wheat variety that has delivered high yield and bold grain. It shows strong performance in untreated yield trials, suggesting good inherent disease resilience. It has performed well over the past three years, across all regions and soil types. Its second wheat performance looks promising, and early indications suggest that it may be suitable for early drilling. It is quick to grow away in the spring and tall with good lodging resistance and OWBM resistance.

KWS Fowlmere

(KWS; KWS Extase X KWS W340)

KWS Fowlmere is a high-yielding hard feed winter wheat variety with very bold grain. It's the earliest-maturing winter wheat on the UK Recommended List, and it may be suitable for export under *ukp*. Its best performance is in the North, and it performs well across soil types, including lighter soils. Best grown as a first wheat, drilled in October or later due to its moderate disease resistance and stem strength. With average disease ratings, it should be considered as a high-input, high-output variety. It is resistant to OWBM.

Does seed size matter?

Agrii's farm-saved seed team works with the certified seed business to provide high-quality seed. Farm-saved seed offers benefits such as provenance, flexibility, and the ability to manipulate seed size.

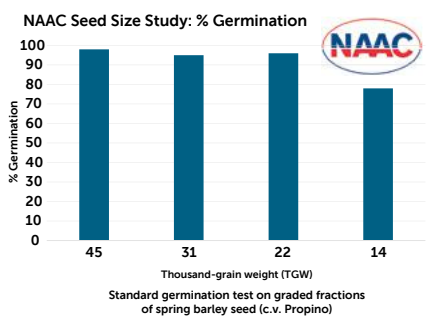
Historically, farmers have always saved their best and boldest grain for planting, a practice that remains equally valid today. But does it result in better crops?

In certified seed production, crops are cleaned and screened, but this process has a cost and limitations. A quality control limit of 30g for the lowest thousand-grain weight (tgw) is applied to cereals, typically only becoming a factor after a difficult growing season.

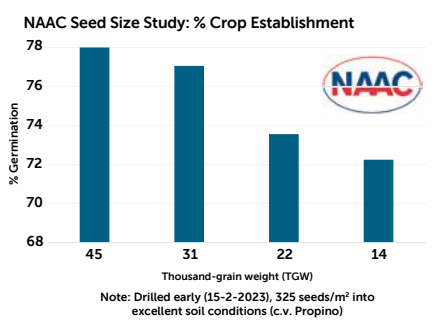
Farmers saving their own seed can screen the crop much more rigorously at no extra cost beyond time. The additional screenings can be sold with the rest of the crop. This allows selection for bolder grain, which is especially useful when the seed crop's quality is inconsistent.

Do bigger seeds improve crop performance?

An independent trial by the National Association of Agricultural Contractors (NAAC) explored this question using the spring barley variety Propino. Seed was separated into different fractions using sieves, and the average tgw was calculated for each. A standard laboratory germination test and field drilling at a consistent seed rate were conducted to assess performance.



A significant decrease in germination was observed in the lowest tgw fraction, and the percentage of crop establishment declined as tgw decreased. The results indicate a clear benefit to improving seed size. Indeed, the trial was conducted in good conditions, and the advantage of larger seeds may be even more significant in poor seedbeds.



The study also highlighted the need for the seed industry to maintain minimum tgw limits. It is important to note that even 'thinner' seed can produce a perfectly viable crop that is reassuring in particularly challenging years.

Secobra-Agrii: strength through collaboration

The partnership between Agrii and Secobra Research dates back to the 1990s, resulting in the successful development of varieties such as Dickens, Memento, Explorer, and Hurler.

Secobra Research is a specialist plant breeding company whose major shareholders include Soufflet, Malteurop, the Carlsberg Group and the Maltsters & Brewers Associations of France, all of whom have a vested interest in malting barley. In 2017, Secobra Research set up a UK spring barley program in Lincolnshire under the leadership of Paul Bury, which has already yielded varieties such as Hurler and Belter, as well as newer, promising varieties such as Ptarmigan.

As growers plan for the 2026 drilling season, the spring barley conversation is increasingly focused on two things: reliability and end market approval. In a climate where variability is the new norm, varieties that combine consistent field performance with proven market acceptability are leading the way. Secobra brings two spring barley varieties that, together, define that important benchmark.

Belter

Now fully approved for brewing and provisional for distilling, Belter gained top spot for yield on the 2026 AHDB spring barley Recommended List. Excellent specific weight, low screening losses, high hot-water extract, and good fermentability have underpinned Belter's progression through the approval process, giving both growers and end users confidence in its suitability.

With consistently strong results across regions, soil types and seasons, its performance is underpinned by sound agronomic characteristics; stiff straw, strong brackling resistance and a reliable disease profile.

Ptarmigan

While only provisionally approved as a dual-purpose variety, it stands out as one of the most interesting varieties currently in development. Ptarmigan's yield remains a clear strength, but it also offers earlier maturity, like farmers are used to with RGT Planet, without sacrificing either yield or quality.

Early maltster feedback has been encouraging, particularly around its large grain size and strong malting performance, including high spirit yield and hot water extract.

Both varieties reflect Secobra's focused investment in UK spring barley breeding. Together, Agrii and Secobra remain enthusiastic about the future of malting barley in the UK and are proud to be part of a market that benefits farmers, end-users and consumers alike.

Making sense of satellite imagery

It is more accessible and affordable than ever before, but do you know your RGB from your NDVI?

Unprecedented access to satellite imagery is giving growers a clearer and more timely picture of what is happening in crops throughout the season. Different types of imagery each bring their own strengths – from high-resolution optical data that highlights changes in crop colour and canopy development, to radar systems that can see through cloud cover and operate reliably in all weather conditions. The challenge is understanding where each approach delivers the most value, and whether there is a single option that allows farmers to confidently hedge their bets.

The most common form of satellite imagery is Normalised Difference Vegetation Index (NDVI). The science around NDVI is based on the principle of healthy vegetation absorbing red light (used for photosynthesis) and reflecting near infrared (NIR) light. Based on this understanding NDVI uses the contrast between these two wavelengths to indicate crop health and (to a degree) biomass, explains Jonathan Trotter, Technology Trials Manager at Agrii.

"NDVI is a relative greenness index rather than a direct plant health index. It is useful for monitoring changes in relative greenness over time, which can then be related to plant health," he adds.

The reason NDVI is best at examining crop performance across a field over time is that it is on a fixed scale from -1 to 1, says Ben Foster, RHIZA Product Manager. The colour range on an NDVI image taken in one year is directly comparable to that from the same field taken at any point in the past.

"It is really useful for looking at establishment and crop growth early to mid-season, because of this, NDVI tends to be the go-to for developing variable rate nitrogen plans for early spring," adds Ben.

Although NDVI provides a qualitative measure of early-season growth and can be used for year-to-year comparisons, it should be used alongside ground truthing, says Jonathan.

"Farmers need to know if an NDVI score of 0.58 in a wheat crop is good or bad," he adds. "Is it showing stress from inadequate nutrition? Is it actually showing signs of drought? Or is it doing well for that soil type with the recent weather? It needs context and ground truthing."

Another reason to ground truth the data is to determine whether the imagery is providing data on your crop or a combination of your crop and any weeds, advises Jonathan. He cites an example of this that came from Agrii's Scottish Digital Technology Farm last year.

"From the NDVI imagery we captured, you'd potentially treat the field differently based on the darker green areas looking more advanced because of the higher biomass.

"We then used our drone crop surveying tool, Skippy Scout, to ground-truth this. Skippy Scout can determine the Green Area Index (GAI) of the crop and uses AI to identify weed species, which it then removes from the calculation. This means we are able to accurately determine crop biomass and treat it accordingly.

"In this example, we discovered that a percentage of this relative greenness was actually due to the annual meadow grass in the crop and were able to adjust our variable rate strategy to account for this."

"By ground truthing NDVI with drone imagery, we effectively tune up the resolution of remote sensing from 5-20m^2 down to cm^2 level data."

Once a crop reaches a full canopy, then NDVI becomes a much less reliable means of measuring a crop's performance, says Ben. This is where a switch to normalised difference red edge (NDRE) is usually necessary. NDRE measures light in the near infrared red-edge spectrum. The NDRE index saturates less easily as the canopy fills out, allowing it to penetrate the crop at this stage and measure nitrogen stress and chlorophyll concentration.

An alternative to NDRE is the green chlorophyll vegetation index (GCVI), which is one of the two free satellite imagery options on Agrii's Contour digital farming platform, says Ben.

"GCVI looks at green reflectance rather than red, which is more responsive to

variations in leaf chlorophyll. A key difference is that the scale is relative rather than fixed, meaning it moves as the image changes throughout the season.

"You could look at a GCVI image and see what appears to be a poor part of the field, but it is relative to the rest of the field. Again, this makes a farmer's understanding of their fields and ground-truthing satellite imagery crucial," he explains.

Regardless of the type of satellite image, they all require an unobstructed view of the field to provide valuable data. The UK's cloudy weather offers a significant challenge to this. If there is a sustained period of unsettled weather, it is not unknown to wait three months for a usable satellite image, says Ben. Most digital framing platforms use the last best image they have to model how the image has moved forward over time.

"The problem is that there's no fresh imagery being fed into the system over time. The Contour platform is unique in this regard because it has access to ClearSky, which can penetrate cloud cover.

"Satellites fire radar waves at the crop, which bounce around in the canopy before being detected by the satellite in space. This is an excellent alternative for effectively determining biomass. We model it in Contour to look like an NDVI image by comparing it against our NDVI data at a large scale," says Ben.

Another technology we are starting to see being used is hyperspectral imagery via satellite, says Jonathan. This effectively uses more wavelengths than a traditional satellite to achieve similar crop health interpretations. The concept being that the more data you have the better the interpretation will be.

However, he provides a note of caution about the capabilities of hyperspectral imagery. "Although hyperspectral imagery has advantages in being able to monitor plant health in greater spectrums, without ground truthing the data or interpreting the context with a detailed understanding of what is going on within the soil, it presently offers little over and above current capabilities which are free and accessible via Contour.

"Unfortunately, hyperspectral imagery is also very sensitive to cloud cover and haze, which is an issue as there are very few hyperspectral satellites at present, meaning data for decision management can be infrequent."

The different types of satellite imagery at a glance

Index	Data type	Best for	Why?
NDVI (Normalised Difference Vegetation Index)	Red (620-670 nm) + NIR (841-876 nm)	Early to mid-season crop vigour	Shows overall biomass and canopy greenness; can saturate in dense canopies.
NDRE (Normalised Difference Red Edge Index)	Red-edge (705-750 nm) + NIR (780-850+ nm)	Mid- to late-season, nitrogen status	Red-edge penetrates dense canopies, highlighting chlorophyll and nutrient levels.
GCVI (Green Chlorophyll Vegetation Index)	Green (540-570 nm) + NIR (780-900 nm)	Biomass & canopy growth, nitrogen status	Tracks greenness and chlorophyll concentration throughout the season; less prone to early saturation.
SAR (Synthetic Aperture Radar) e.g. ClearSky	Microwave radar (varies by sensor, e.g. 5-10 cm wavelength for C-band)	All-weather monitoring	Penetrates clouds and works day/night; detects soil moisture, structure, and crop biomass.
RGB (Red, Green, Blue)	Visible spectrum (Red, Green, Blue: 400-700 nm)	Visual inspection, scouting	High-resolution photos; easy to interpret but limited for detailed physiological metrics. Best used in combination with tools like Skippy Scout.

Expansion of smart codling moth trap network planned for 2026

Apple growers report fewer and more precisely targeted sprays for codling moth control from the RapidAIM digital traps. Vine and soft fruit growers could soon see their own versions for light brown apple moth and spotted wing drosophila detection next year.

2025 was the first season that the RapidAIM smart codling moth traps were available for fruit growers to buy, following two years of trial work by Agrii. The devices can detect codling moths using capacitance sensors as they pass through, and growers receive alerts via a phone app or website.

Growers need one trap for every 3-4 Ha of orchard, laid out in a grid pattern, says Nancy Schellhorn, CEO of RapidAIM. They are simple to use, powered by rechargeable batteries, with a pheromone lure to attract the moths. Because of the detection method, the volume of recorded data is very small, so RapidAIM does not require a reliable 4G connection. Instead, it uses the IoT narrow-band mobile network, which is much more reliable in rural areas.

"We use capacitance sensors, which is the same technology to scan a fingerprint on a mobile phone. Because we are only sending small amounts of data using this method, we can send them in real time with excellent connectivity and longer battery life.

"Thousands of RapidAIM sensors are rolled out across many countries, and so far, there have been no connectivity issues," says Nancy.

"We have been pleased with the uptake in the first year," says Matt Greep, area business manager for fruit at Agrii. "The grower feedback on how they find them has been excellent: the deployment, the setup, and understanding the data they are collecting.

The RapidAIM traps require a change of mindset from the old delta-trap method, which is much more hands-on for growers than the new remote system, adds Matt.

Checking codling moth levels with RapidAIM is done entirely through the app or web portal. The data gives daily detections vs weekly or longer time spans for delta-traps.

Looking ahead to 2026, Matt plans to significantly grow the number of traps deployed and develop reporting tools to analyse the data. The more traps that are on farms will increase the visibility of the pest threat across the growing area.

"The more traps that are deployed, the broader the network of data that we have and the better the quality of data. This benefits everyone.

"If a grower has a trap on their farm, then we have precise data showing exactly what is happening 24/7. More importantly, as agronomists are working with multiple growers, we know what is happening on neighbouring farms across the whole region where RapidAIM is deployed.

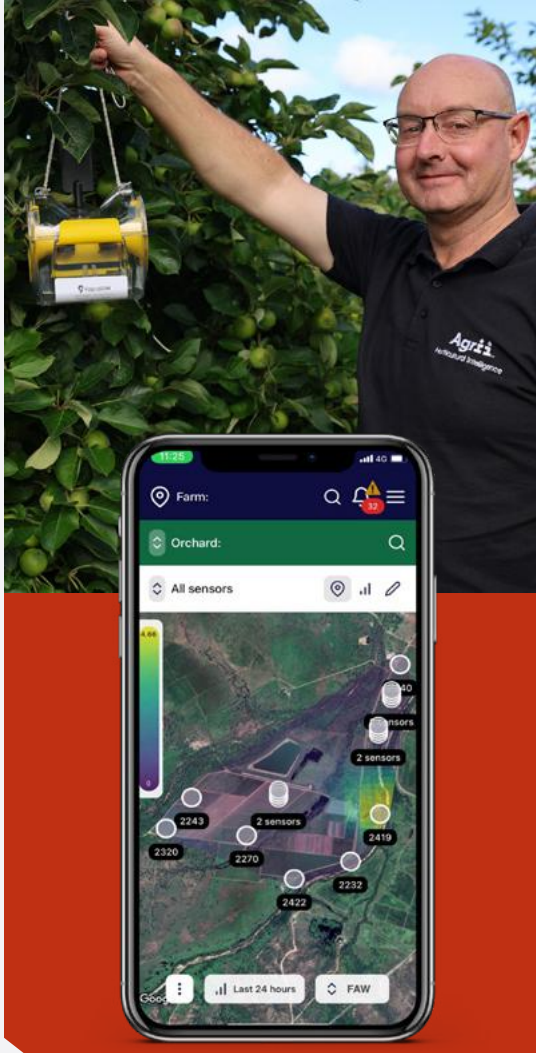
"The scale of knowledge on one platform is a huge step up when compared to what we had to do before, which was to speak to neighbouring agronomists to find out what levels they were seeing in their traps. Having access to information from all the traps deployed across a group of agronomists ground-truths the data from individual traps and allows us to be more coordinated with our codling moth control strategies," explains Matt.

With the number of permitted Coragen (chlorantraniliprole) applications reduced from three to one, precisely targeting the available chemistry is key to effective control, according to Matt.

Because the RapidAIM trap records the exact time of day that the moth enters it, they can also calculate the time of the peak flight period. Matt says they can now be much more precise about when codling moth flights occur, allowing agronomists to recommend a time of day to spray, as well as the best day and product choice.

"Some growers are saying they are saving on sprays already by being able to miss a round or be more timely with the sprays they do apply," he adds.

www.agrii.co.uk/news-and-media/news/rapidaim



RapidAIM plans new capabilities to detect light brown apple moth and spotted wing drosophila

Commercial trials were conducted during 2025 in the UK and Australia to detect light brown apple moth in vines using RapidAIM. Matt says they plan to make this available to growers this coming season, with the same benefits as apple growers have experienced in detecting codling moth.

2026 also sees the start of commercial trials on spotted wing drosophila in soft fruit crops, with a plan to roll this out in the future. RapidAIM was developed initially to detect drosophila incidence in Australian fruit farms, before it was adapted for codling moths, says Rebecca Feddema. Matt expects the spotted wing drosophila tool will be popular with growers when it eventually rolls out.

Future perspectives on top fruit farming

By Neil Obbard, Agrii agronomist

Top fruit farming over the last few decades has followed the industry's trend, undergoing major changes, including new varieties, new planting systems, and new technologies. But the one thing that doesn't seem to change is the pressure from pests and diseases, with some modern varieties seeming even more susceptible.

With changes to the labels and the approvals of many active ingredients, apple orchards are under attack from some of our oldest enemies: apple scab, rosy apple aphid, woolly aphid, and codling moth remain major concerns. Additionally, some notable previously well-controlled pests such as apple sawfly, apple capsid, and apple rhynchites, are becoming significant problems once again.

The only answer to these problems is to use all the agronomy tools we can.

01 Understand the problem and how it will affect your crop.

02 Be even more vigilant, walk the crops more regularly, use as many different types of monitoring devices as possible, for example pheromone traps and the RapidAim system, to give us as big a picture of what the pest and disease load is in each orchard.

03 Use cultural methods to reduce the percentage risk and population in the crop.

04 Incorporate biopesticides into programmes where applicable.

05 Application timing of control methods has never been so important.

The problems are much too complex to provide the answers in one article, especially ones that would apply to your farm, crop and even individual areas in an orchard. However, it is important to recognise that everyone faces similar challenges. Working with an expert who sees a range of challenges across different farms, backed up by independent research, like your Agrii agronomists, will mean you give yourself the best chance of growing a successful crop.

One area I wish to stress is timely application. Getting a product on before the population of an insect builds up, or to apply a fungicide as a protectant during periods of rapid growth and maintaining your cover have got to be fundamental in our approach. Issues like the weather, time, and machinery faults, to name but a few, get in the way of this. Now is the time to take a look at what went well last season and where we need to make changes, and this is one area that warrants further discussion while we have the time to take stock.

Mitigating biennial bearing after a bumper 2025 harvest

Big yields and excellent quality, the hot summer has provided top fruit growers with a bumper 2025 harvest. However, now is the time to begin taking steps to minimise the risk of a disappointing 2026 because of biennial bearing, says Agrii agronomist Ryan Williams.

For some cultivars, such as Cox and Braeburn, biennial bearing is a significant consideration, as we head into next season, cautions Ryan.

Biennial bearing refers to the tendency of a tree to bear a light crop following a year when the crop load was high, he says. The cause is not fully understood. It is believed that hormonal control and the tree using up excessive resources to produce a huge crop in one year are chiefly to blame. This leaves it with a reduced capability in the following year.

"Conversely, another cause of initiating crop bienniality is frost during blossom. A frost can result in little to no crop during that growing season. The following season is expected to yield a heavier crop than desired. This also conveys the importance of adequate frost protection during flowering.

"Growers want uniformity and consistency in output across years, and biennial bearing can be a real challenge to that. A well-measured approach to pruning and nutrition can help mitigate the risks associated with it," explains Ryan.

A key factor when pruning is to ensure the size and structure of the tree is maintained, adds Ryan. By addressing structural issues now, enhancing light penetration, airflow, and renewal growth, growers can set their orchards up for another successful harvest. He stresses that a well-designed A-frame architecture will allow light to pass through the canopy to the fruit buds.

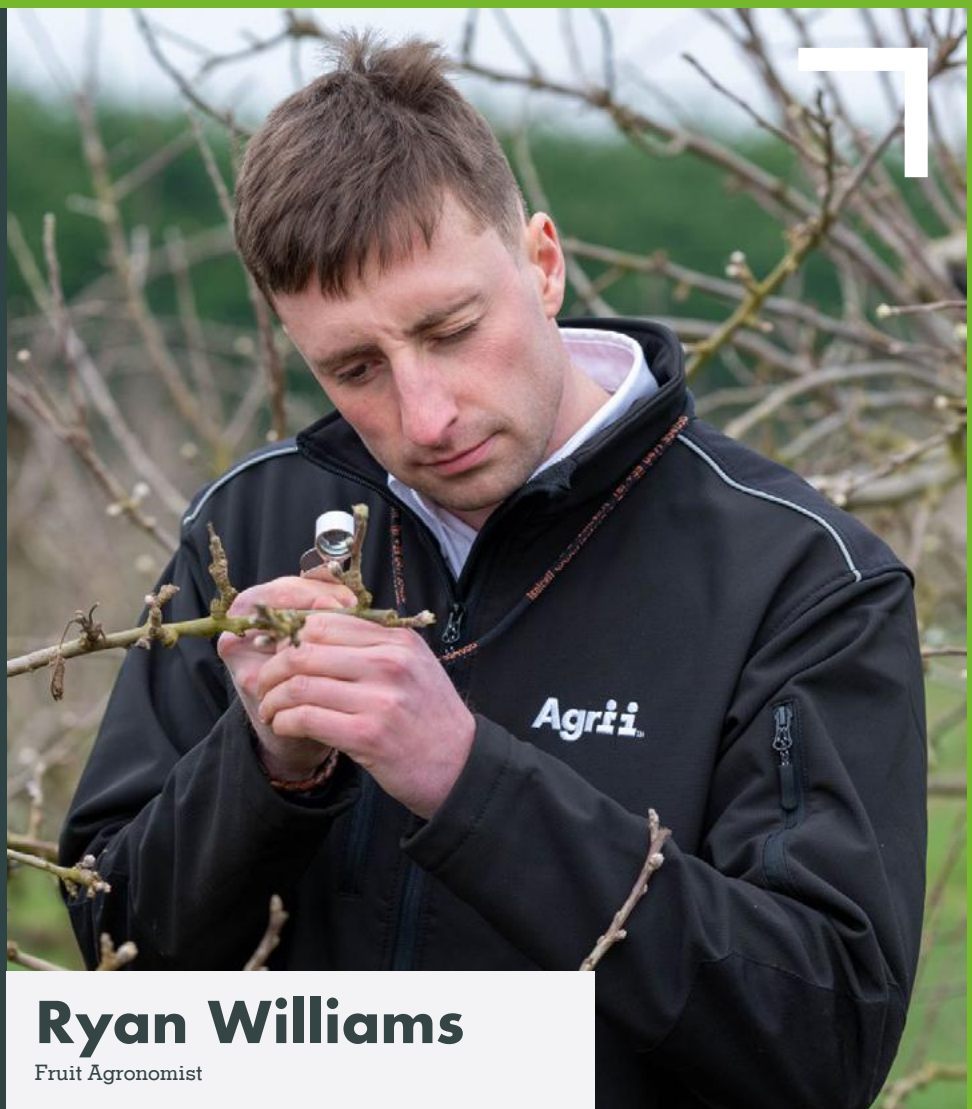
Ryan also believes that taking a closer look at nutrition in the year following a high-yielding season is required.

"Winter is a great time to get soil analysis done. It will inform us of our current position and enable us to calculate additional nutrient offtake following a heavy cropping year. We recommend that growers not rely on historical nutrient programmes next season and check the fertility of their orchard's soils," says Ryan.

He adds that nitrogen, phosphorus and potassium levels will all be key, as will micronutrition through next season.

"With some luck, we will have another season conducive to high yields, which will go a long way to reducing biennial bearing. However, there are steps we can take in the off-season to mitigate the risk, and it is good practice to undertake them while we have the time," concludes Ryan.

Agri intelligence



Ryan Williams
Fruit Agronomist

THE POTATO PARTNERSHIP

Regional Results Meetings 2026

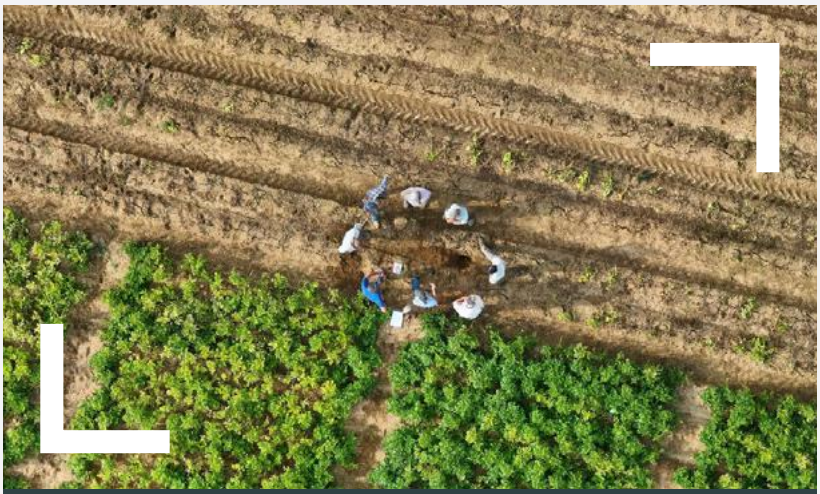
Real Results. Shared Success.

Join us! The Potato Partnership brings growers and the wider industry together to tackle the biggest agronomic challenges facing potato producers. Now in our fourth year, we're heading back on the road with regional events in four locations across the UK, sharing our latest trial results, insights, and practical takeaways.

Covering:

- Work on solutions for wireworm control
- New approaches to PCN management
- Integrated PCN control – an evaluation of varietal resistance and tolerance to PCN
- New materials for aphid and virus control and companion cropping
- Novel approaches to late blight control
- Discussion on Biostimulant efficacy
- Exploration of options to reduce CO_2 footprint
- Evaluation of novel approaches to *Alternaria*

Thursday	Friday	Thursday	Friday
12	**13**	**26**	**27**
February	**February**	**February**	**February**
Herefordshire	Essex	Scotland	York



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With special thanks to all of our trial partners.

Speakers:

Don Pendergrast
Technical Manager (non-combinable trials), Agrii

Graham Tomalin
Director of VCS Potatoes

James Wrinch
Director of East Suffolk Produce

Ed Maule
Potato Technical Advisor, Agrii

A new generation of soil and plant nutrition products

"One fact remains very clear – we need to understand how we can improve our soil health both in the UK and globally."

The Agrii Soil Inputs range offers growers practical and proven ways of improving their soil health, optimising their crop input use and boosting farm productivity.

A key element of Agrii's position in the UK agricultural industry is the 'ground-truthing' of claims for new services, technologies and products.

Only when we are happy that any new idea delivers what it promises will we put the Agrii name behind it and when it comes to soil improvement, it is truly a complex area with many claims, conflicting theories and general mystery.

"We spend a lot of time trying to separate the wheat from the chaff, to use a manner of speech," explains Agrii Product Manager for Speciality Nutrition Tom Perrott.

"Improving soil health is one of the most important foundation stones of more regenerative agriculture, and an essential focal point whether you see yourself as a full blown regenerative farmer or one simply trying to embrace more of its concepts.

"Whatever your style of farming, one fact remains very clear – we need to understand more about how we can improve our soil health both in the UK and globally.

"Depending on the weather and cropping we, the global community that is, can lose up to 25-75 million tonnes of topsoil every year!"

Simple approach

It's well known that soil health and biological activity can take a hit when a lot of inputs are applied, he points out.

"Everything from FYM to Ammonium Nitrate will all make the biology work harder, but the question is have you got the right pH, the right soil structure and a history of good management practice to make such practices productive and sustainable long term.

"It's all too easy to lose sight of the basics in the complex scenario that is modern agricultural production and current farm economics can make it difficult to focus on the often perceived as 'nice to have but not essential' elements of soil health.

"With this in mind, Agrii have developed a portfolio of simple products that don't overcomplicate the approach of improving our soils and reducing the reliance on synthetic inputs.

"Many help maximise the beneficial impact of what we already have – like Bokashi for FYM management or Agrii-Start Release to improve phosphate availability.

"We now have high quality liquid carbon sources with a bolt-on approach to additional amendments to fit individual needs."

Exclusive technology

Another part of the Agrii Soil Inputs range is some new exclusive pellet technology based on natural manures and other organic sources, he adds.

"One range, for example, uses sterilised chicken manure to create a cost-effective way to supply organic matter and nutrition in one pass.

"Another is a sheep manure that is broken down using bio-fermentation over a 12-month period. As well as being full of highly beneficial, readily available organic matter, it is truly alive with over 600 soil health enhancing microorganisms identified."

It's truly an exciting time to engage in such a new, refined and effective approach to crop and soil health, Tom Perrott believes.

"We want to keep the building blocks to soil improvement simple and the Agrii Soil Inputs range provides a step-by-step opportunity to take advantage of proven technologies that results in better soil health and productivity combined with great value."

Thomas Perrott
Agrii Product Manager for Speciality Nutrition

Interested in how the Soil Inputs Range could fit into your farming system?

Email **thomas.perrott@agrii.co.uk** for further information and practical guidance on use and application.

How to boost your Nitrogen Use Efficiency (NUE) this spring

"NUE is fast becoming one of the most important metrics in agriculture."

With farm margins under pressure and the need to balance high levels of on-farm productivity with reductions in the carbon footprint of food production generally, getting as much out of every kg of Nitrogen applied has never been more important.

In simple terms, Nitrogen Use Efficiency (NUE) describes how well available Nitrogen is converted into grain and it's fast becoming one of the most important metrics in agriculture, says Agrii National Fertiliser Manager Tom Land.

"Understanding NUE is essential from productivity and cost-efficiency viewpoints but increasingly environmental ones, too.

"In its most basic form NUE can be seen as the grain yield in kg produced from 1.0kg of total available Nitrogen from both applied nitrogen plus soil mineral nitrogen expressed as a percentage with the higher the number the better.

"It can be simplified further where N content of grain produced is compared directly to applied Nitrogen as the input. This can be useful, but it assumes soil available nitrogen is a constant which is not the case.

"NUEs from conventional fertiliser practices are typically in the region of 50-60% but there are many ways this can be improved with 70-80% being a realistic target on many farms.

"There are many well-known factors that affect NUE such as fertiliser choice, application timing and the impact of weather conditions, but our understanding of the topic and the science behind it is growing all the time.

"So, too are the number of new technologies and products that can help drive higher levels of NUE and focusing on these can be a real catalyst behind improved on-farm productivity, better cost efficiency and reduced environmental complications.

"But higher NUE is also increasingly important in terms of crop marketing with growing numbers of buyers and processors paying premiums for more sustainable production, in which efficient fertiliser use is a major contributor."

With all these factors in mind, Tom Land highlights six key areas for growers to consider when pursuing higher levels of NUE.

01

Improve soil structure

In most production systems, the majority of the Nitrogen your crops take up will come from the soil and the condition of this will have a profound effect on NUE.

Compacted soils make root development difficult, poor drainage can contribute to soil pH changes and poor overall nutrient status can interfere with the soil biome and its ability to make N available to plants.

Our Soil Resilience Strategy (SRS) is a comprehensive source of information on all aspects of soil management and, as with all aspects of improving NUE, it is well worth talking to your Agrii agronomist to understand more about this.

Increasing organic matter (OM), for example, can have a massive effect on nutrient uptake and judicious use of organic inputs such as FYM can play a leading role in this, but be mindful of the Farming Rules for Water (FRfW).

Cover Crops can help improve soil structure and rooting performance through encouraging greater root depth and mass in the short term but longer term they can add vital Nitrogen fixing capability, build OM significantly and reduce nitrate leaching.

Paying attention to field drainage is also essential in ensuring soils perform at their best to allow maximum root development and nutrient scavenging. Waterlogged soils also tend to be more acidic which affects nutrient uptake.

It's also important to test your soil pH regularly and be prepared to carry out liming to achieve the optimum level to encourage the best nutrient uptake.

Tom Land
National Fertiliser Manager

02

Pay attention to crop rotation and seed rates

Crop choice has a massive effect on fertiliser need so if reducing nitrogen requirement is a key commercial objective, it might be worth revisiting rotations to see if changes can be made to facilitate this.

If Nitrogen levels are sub-optimal, tiller loss may result which can severely compromise yields subsequently. Seed numbers can be increased to address this and Rhiza/Contour can help in determining the correct rates to use.

In such situations it's also worth considering root-boosting agronomic interventions such as early PGRs, foliar nutrition and if you are using liquid fertilisers, it is well worth combining these with the urease and nitrogen stabiliser Liqui-Safe.

03

Feed to need

Planning fertiliser use and targeting applications carefully is essential. In an ideal world you need to be applying to the point at which you get the highest return and even a kg more will adversely affect this.

Identifying the break-even point of fertiliser use and the optimum application rate can help ensure the Return on Investment (ROI) is maximised. Again, it's a good idea to discuss this with your Agrii agronomist.

Technologies like RHIZA can help immensely with this process, while using N-Min soil testing, combined with GAI analysis and Agrii N calculators, can help pinpoint precise Nitrogen requirement taking into account plant growth and existing soil reserves.

Tissue testing and grain analysis, along with examination of historical grain protein data can also help finetune optimum application rates.

If you're growing milling wheat, talk to your agronomist about the Hillcourt Research grain protein test to pinpoint precise N needs to maximise yield while also hitting protein requirements.

04

Choose fertilisers wisely

Agrii-Start technologies such as Release, Liqui-Safe and Enhance can help lift NUE significantly.

Liqui-Safe, for example, has been shown to improve NUE by 15% through reducing N losses to the air and preventing leaching. In recent UK trials, Liqui-Safe added nearly a tonne to winter wheat yield over UAN by itself and produced an ROI of over £170/ha.

Agrii-Start Release can also improve the efficiency of your fertiliser use by helping prevent P lock-up and making other nutrients more available at the same time.

Use of Agrii-Start Enhance granular urea to ensure N is protected and stabilised so volatilisation, leaching and nitrification are reduced, will also help improve NUE.

Lono Multi is another fertiliser technology that increases rooting and rapid greening of foliage in crops to improve plant health and make them better equipped to deal with stress.

It's also important to ensure Potassium (K) is balanced with Nitrogen to allow maximum effect from applied N. Sulphur (S) is important in the NUE equation as well, with Polysulphate being a good source of both S (48% S03) and K (14% K2O)) alongside Calcium (Ca) and Magnesium (Mg).

05

Keep an open mind about Biosolutions

Strategic use of Biosolutions as part of an integrated agronomy programme can help increase NUE through enhancing the plant's response to macro nutrition, fungicides and PGRs while enabling the plant to search out available nutrition more efficiently.

Biosolutions can stimulate plants to use nutrients to build yield and quality at the same time as alleviating stress responses. They can also help boost GAI thereby trapping Nitrogen reducing fertiliser requirements and boosting ROI.

Humic acid based seed treatments, for example, have been shown to deliver £3 back for every £1 spent due to improved nutrient uptake, enhanced levels of chlorophyll and better tolerance to abiotic stresses.

Nutriphite PGA and Quark also stimulate similar responses in crops along with other agronomic benefits, while Physiocrop, a mineral-based fertiliser based on vegetable-derived amino acids, has also proved very valuable in this regard.

06

Consider fungicide and PGR benefits

Improving rooting is key to maximising NUE and fungicides such as strobilurins and SDHIs have a well-documented effect on plant greening, growth and health.

Pyroclostrobin is particularly effective and now Architect, for example, takes this a stage further in OSR with well-researched benefits to root growth.

Trials with Architect have, in fact, shown a doubling of root mass over untreated in OSR crops and this has been replicated in the field with root mass and rooting depth being significantly improved.

Early season PGR use in cereals can also improve NUE with Alatrin Evo showing particularly strong performance in cold conditions. Adjust is another highly effective option.

To take full advantage of these NUE boosting strategies and technologies, please talk to your Agrii agronomist at the earliest opportunity.

You can also find out more by visiting the fertiliser pages on the Agrii website...

www.agrii.co.uk/our-services/fertiliser

Agri intelligence

Oxfordshire farm's forward-thinking outlook delivers a sustainable future

Embracing new technology and taking its introduction one step at a time has helped Oxfordshire farm manager Piers Cowling develop a more sustainable farming approach, tackle a significant Blackgrass problem and improve soil organic matter.

Working closely with Agrii in recent years he has successfully navigated the transition to direct drilling, improved Nitrogen Use Efficiency (NUE) significantly and introduced biosolutions into his agronomy programme, all whilst maintaining a 9.5t/ha wheat yield.

"Two of the key priorities that have driven many of our recent decisions have been a focus on improving soil health and getting on top of blackgrass," he explains.

"Standardising cultivations has been a key objective with a move towards direct drilling being an important element of this."

Today Sparsholt Manor Farms' 1150ha of arable cropping on the Oxfordshire Downs follows a seven-year rotation based on oilseed rape and wheat broken up by two break crops of spring-sown barley and beans.

"We've found spring crops do not help much in the blackgrass fight – spring barley remains competitive but beans are a bit of a weaker link. They have, however, allowed us to adopt a different pattern to the cropping."

Blackgrass success

Delayed drilling has also been a cornerstone of the business for some years, inspired by results from Agrii's long-term Stow Longa trials site, he adds.

"We usually don't start drilling until the second week of October which can be a challenge with up to 600ha of wheat to get in the ground.

"We're feeling our way with things but we have found that the move to full direct drilling means we are not disturbing the soils so much and bringing as much seed to the surface.

"We've definitely seen a lot less blackgrass in recent years to the point that we were confident to drill a bit earlier this last year and actually finished everything within the first 10 days of October.

"We started with cover crops in 2013 when there was very little information available on how to manage them and have grown all sorts over the years.

"We've tried clovers in the early years but at 800' above sea level and a relatively late harvest, we found the clover did not nodulate. We've had more luck with vetches that definitely do better when drilled later in these challenging conditions.

"Organic matter of soils has increased from just below 4% in 2018 to around 7% today and with no organic manures, this is purely down to the reduced cultivations, cover crop use, all straw being incorporated, and just being more aware of actions that might affect soil health generally.

Increased NUE

Nitrogen Use Efficiency (NUE) is also something which has seen significant gains in recent years as a result of the business' more holistic approach.

"We were previously using 220kg N/ha of liquid fertiliser in three splits which we calculated was probably giving us an NUE of around 50%. Since 2021, we've made a real effort to improve this with one of the biggest changes being the addition of Liqui-Safe.

"Since we've been using it, we've gradually optimised fertiliser use to 160kg N/ha, applied in two equal splits, which has raised NUE to 70% without any yield loss.

At times we've used 120kg N/ha and see NUE reaching nearly 90%.

"We're also starting to see promising results from using Fortis CP which provides a carbohydrate source to balance the C:N ratio."

Agrii agronomist Iain Richards explains Biologicals are also now integrated into the agronomic programme to help get the most out of fungicides and to boost plant health as well as helping the crops cope with disease threats.

"Later drilling means disease pressure is usually lower at the T0 timing so we can make full use of Biologicals as they are at their most effective then and can help minimise potential damage to soil biology in bare earth conditions.

"In addition to integrating biologicals we have also focused on the whole nutrient status of the plant. At T0 in particular, we put quite a big emphasis on plant health and nutrient status and have used a fair amount of Innocul8.

"As the season develops, we monitor the disease situation and introduce fungicides as necessary at the later timings when plant and leaf area have developed so we can get the full effect from them."

Focus on yield

Agrii seed specialist Ian Davy points out that the blackgrass challenge and the focus on later drilling have also shaped variety choice in recent years with the move away from milling to predominantly feed varieties adding to this.

"Group 4 high yielders with a good disease profile are the priority now although we have gone for some of the stronger Group 2s, mainly for their yield and consistency than their milling potential.

"So, we've focused on high tritici type varieties that will establish well in later drilling slot and with direct drilling.

"The Group 2 variety Palladium, Group 3 Bamford and Group 4s Cranium, Oxford and Beowulf are currently the wheat varieties of choice. Extase has done well in recent years, too.

"They are all what we would describe as fairly 'growy' so they get away well here in that later drilling slot. Seed dressings have been key to good establishment with Vibrance Duo being a big success and we're now looking at the new Ympact humic and fulvic acid treatments too."

Piers Cowling
Farm Manager, Sparsholt Manor Farms

Why all liquid fertiliser users should now consider Liqui-Safe

Growing numbers of Agrii customers are turning to the urease and nitrification inhibitor Agrii-Start Liqui-Safe to make the most of their liquid fertiliser applications and improve crop yields and quality while helping protect soil biology and the wider environment.

Liqui-Safe has been proven to improve the efficiency of UAN by 15% with recent UK trials showing a near 1.0t/ha yield gain in winter wheat trials and a return on investment of over £170/t/ha.

These production benefits have been achieved at the same time as delivering significant environmental benefits including a reduction in N loss from volatilisation, denitrification and leaching.

"In the current production and legislative environment it is difficult to see why anybody applying liquid fertiliser would not choose to use Liqui-Safe too," says Agrii National Fertiliser Manager Tom Land.

"For the technically minded, it's a highly water-soluble organic compound derived primarily from the fermentation of maize with a high cation exchange capacity designed to sequester elements involved in the nitrogen cycle.

"At a more practical level, Liqui-Safe simply ensures as much of the Nitrogen you apply is used for crop growth, being available to the plant for a longer period without being lost from the system to air or water.

"It's particularly effective at times of possible abiotic stress resulting from factors such as dry conditions or prolonged, heavy rainfall – both of which have presented an increasing challenge for UK growers in recent years."

Significant financial benefits

Trials have consistently shown positive yield responses across a range of crops including cereals, with winter wheat results particularly impressive, he points out.

"In one specific UK trial carried out with winter wheat in 2024, the combination of UAN with Liqui-Safe produced a yield of 14.58t/ha compared to 13.79t/ha from the UAN itself – an increase of 0.79t/ha.

"In what was already a pretty efficient system already, Liqui-Safe lifted Nitrogen Use Efficiency (NUE) from 88.9% to 94.8% resulting in a direct Return on Investment (ROI) of £171.60/ha.

"Across a range of crops, and in a variety of conditions and locations across the world average yield improvements from Liqui-Safe have been in the region of 4% with significant gains in margins resulting.

"Don't forget using Liqui-Safe with liquid fertiliser applications also provides the opportunity for combining other nutritional and protective products into a single pass, saving time, fuel, and labour costs, too."

Impressive environmental credentials

While the overall economics of using Liqui-Safe are highly significant, its environmental credentials are pretty impressive as well, Tom Land points out.

"As well as ensuring Nitrogen stays in the rooting zone where it is needed, Liqui-Safe also reduces losses from leaching and volatilisation.

"Extensive research has, in fact, shown it can reduce Nitrogen depletion through ammonia volatilisation by up to 88% alongside cutting losses due to de-nitrification by over 80%.

"When it comes to controlling loss of N from the soil to ground water, trials have reported a reduction in leaching of up to 43% from Liqui-Safe use.

"In addition, the Nutrisphere-N technology behind Liqui-Safe has been proven to have zero impact on terrestrial organisms, including earthworms, aquatic organisms and freshwater fish in extensive trials over a 12-month period.

"European trials have also shown use of the technology to deliver a 74% increase in Mycorrhizal colonisation and soil microorganism population in comparison to untreated urea."

Operational flexibility

Liqui-Safe performs well at all application timings and is simple to use, adding to its operational effectiveness, Tom Land stresses.

"It can be added to early spring applications, typically those before 31st March, when the risk of nitrate leaching means growers would either make a light application or delay it until a later date.

"Liqui-Safe not only enables applications to be successfully made at this early timing, it also reduces leaching and allows for higher rates to be used, where necessary.

"In this way, the number of split applications needed to deliver the full rate can be reduced.

"For applications after 31st March, the product serves to reduce ammonia losses that occur through volatilisation making Liqui-Safe Red Tractor compliant."

A further benefit of Liqui-Safe is the ease with which it can be handled, being available in 20-litre cans and IBC's with a full inclusion rate of 0.5% or 5 litres per 1000 litres of liquid, he adds.

"By adding Liqui-Safe to the sprayer tank at the time of application its properties are not impacted by sitting in solution with sulphur-containing fertilisers which has been found to degrade the performance of some inhibitors."

Liqui-Safe improves NUE and simplifies management in Gloucestershire

Farm manager Mark Atkin of Bourton Hill farm in Gloucestershire has been using Liqui-Safe for three years and in that time has managed to cut out one fertiliser pass, reduced N inputs by 10% and seen winter wheat yields lift.

With 600ha of arable production at 800' above sea level, key priorities are keeping the system and management simple and ensuring crops get away to the best start possible and keep growing through what can be a challenging growing season, he says.

"Although we're fairly central location-wise, we're about two weeks behind the average for the UK in terms of growing season.

"That shapes a lot of our decision making as does the need to keep on top of blackgrass, so we're usually drilling into the middle of October and choosing varieties that we know have the vigour to establish well.

"We're mainly growing for the feed market so varieties like Group 4 Fitzroy and Group 2 Extase work well for us and have shown they have the necessary vigour and resilience to perform well in our climate and with the min till system we use."

Fertiliser policy has been based on liquid fertilisers for over ten years and was previously based on a three-pass system, with the last application always presenting problems, Mark recalls.

"We seemed always to be making that last application at night to avoid scorch and with the area we have and the limited number of days that were not too breezy, it was a real challenge."

Working with his Agrii agronomist Oliver Fairweather, he decided to start using Liqui-Safe to simplify the system and make better use of the Nitrogen contained in the UAN.

"We decided to focus on two passes of 120kg N/ha each – one in early to mid February and the second at the end of March – and it's worked really well.

"Not only have we cut that troublesome final application out, we've also reduced our total N use by about 10%.

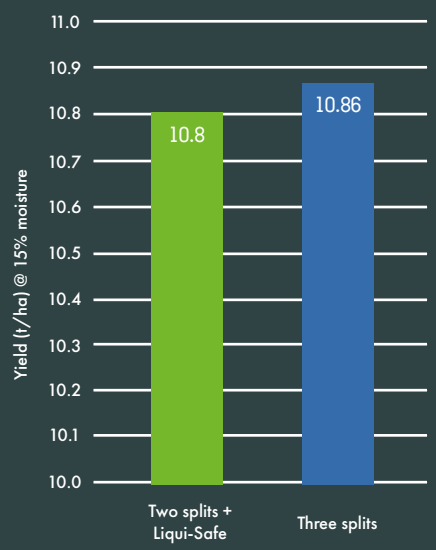
"Last year, our Fitzroy yielded 11.0t/ha in what was not an easy year, so we're convinced of the benefits of using Liqui-Safe. It's simple to use, has definitely increased the efficiency of our N applications and suits our system perfectly."

Liqui-Safe efficiency

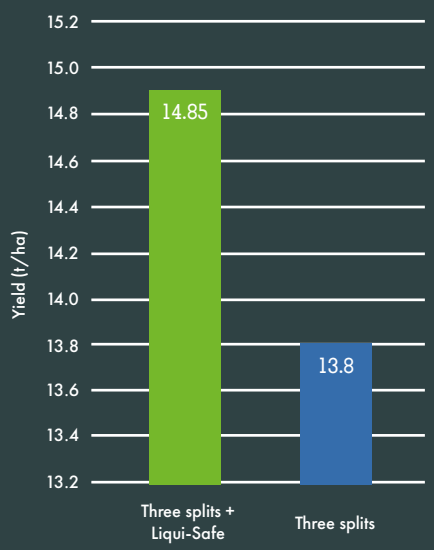
By using Liqui-Safe growers can cut the overall application rate applied and the number of passes needed to satisfy crop requirements. Trials indicate that a two-split programme with Liqui-Safe used at both timings delivers yields broadly the same as that achieved with a conventional programme based on three splits (see graph 1.)

Alternatively, a conventional three-split programme comprising 70kg N/ha; 86kg N/ha; 80kg N/ha and featuring Liqui-Safe will improve yield potential (see graph 2.)

Graph 1



Graph 2



Autumn event round-up

Vineyard & Winery Show

British Potato Show

AgriScot

Midlands Machinery

AGRII iFARMS

2026 Upcoming iFarm dates:

5th June – Stow Longa (AM only)
12th June – Stow Longa (Anglia Region)
15th June – Stow Longa
16th June – Lenham
16th June – Winderton
17th June – Throws Farm
18th June – South West (Exeter)
18th June – Tusmore
19th June – Throws Farm (AM only)
22nd June – Uttoxeter
22nd June – Market Weighton
23rd June – Eyemouth
23rd June – Dorset
24th June – Ludlow
24th June – Kinross
25th June – Dunecht
25th June – Brackley
29th June – Revesby (PM)
30th June – Stow Longa
30th June – Cheriton Bishop
2nd July – South Wales
3rd July – AgriiFocus

Watch out for your invite by email or keep an eye on our website at agrii.co.uk/events