

# Agrii Journal

Spring 2024

Agri intelligence



## What's inside?

- 03 DEFRA SFI & CS Payments
- 06 Priorities for farm-saving spring barley
- 12 Scottish Agriculture: from soil to harvest
- 14 Livestock – lupins prove a good replacement for soya meal
- 17 Veg trials show yield benefit of Agrii-Start Release
- 22 Crop Nutrition Insight – how to kickstart slow growing crops this spring
- 24 Fruit – biologicals offer welcome activity against vine diseases
- 26 The Potato Partnership



**NEW!** View the Agrii Journal on your mobile or laptop: **Responsive. Interactive. Access anywhere.**

## Putting the **Agrii SFI** plan into action on-farm

In the last Agrii Journal, we looked at how tackling the new 2023 Sustainable Farming Incentive (SFI) systematically involving a three-stage plan could make the task less daunting and more rewarding. In this issue, we get an insight into how it works on-farm.



Paul Pickford

Having pulled out of his SFI pilot on 214 Ha near Alcester in 2022, Warwickshire grower Paul Wilson has just entered all 755 Ha of G.W. Wilson & Sons' owned and tenanted arable land and a small amount of permanent pasture into the 2023 SFI.

"Setting up the original pilot was time-consuming but not difficult, and the arable soils standard, in particular, suited us well," he explains. "But, in the end, we simply couldn't justify taking out of production even the 5% of the land required by the Introductory Arable Land Standard for the payment available. At the same time, the scheme wasn't compatible with the attractive carbon payments opportunity we were also exploring. So, we had to pull out."

Working with Agrii SFI consultant Paul Pickford, Paul Wilson now believes the greater flexibility of the new scheme and the fact it can be run in parallel

with carbon credits makes it a much more attractive option.

Adding all the farm's 2023 SFI actions together, the team calculate that, after costs, they should be able to replace around 33% of their original Basic Payments Scheme income with their current plan.

Furthermore, soil carbon benchmarking over the past season suggests they are likely to virtually double this through their annual carbon payments.

"The first thing we did in building our 2023 plan was to include all the SFI actions we are already doing as a business for Red Tractor, Farming Rules for Water and the like," Paul Wilson notes. "This gave us a good soil, IPM, nutrient and hedgerow management base for our scheme. It has involved some extra work in places here, for instance, assessing and measuring all our hedgerows."

SFI Action	Area
SAM1: Soil management planning	All
SAM2: Multi-species winter cover crops	40 Ha
HRW1: Hedgerow recording	All
HRW2: Hedgerow management	All
HRW3: Hedgerow tree management	All
IPM1: Integrated pest management planning	All
IPM3: Companion cropping	120 Ha
IPM4: No insecticide use	378 Ha
NUM1: Nutrient management review	All
NUM3: Legume fallow (three year)	3.3 Ha
NUM3: Legume fallow (rotational)	40 Ha
AHL2: Winter bird food	5.3 Ha
AHL3: Grassy field corners and blocks	12 Ha
AHL4: Buffer strips	3.6 Ha
LIG1: Low input grassland	17 Ha

Table 1. G.W. Wilson & Sons' 2023 Sustainable Farming Incentive Plan

Continued on page 2...



www.agrii.co.uk



# 02 Sustainable Farming Incentive (SFI)

Continued from page 1...

"But this has been a very useful exercise in itself, enabling us to identify additional field corners and rough areas suitable for other SFI actions as well as understanding our field boundaries in more detail than ever before."

## Additional actions

Going through current practices, the two Pauls then identified specific areas for additional actions.

"We have always grown just over 5 Ha of winter game cover, had a good amount of buffer strips, and found a surprising area of field corners and inconvenient areas that would be much better off down to grass than cropped," Paul Wilson explains. "We also had a small, very difficult field that lent itself ideally to a three-year NUM3 legume fallow. Going for a reasonable area of multi-species winter cover (SAM2), we can rotate around ahead of our peas or spring barley, which makes perfect sense for us, too. Cover cropping is something we've been doing anyway to improve our soils as well as protecting them, while providing some useful sheep grazing."

"The new SFI rules allow us to continue the grazing, and while the cover is supposed to be maintained through December, January and February, we are allowed to destroy it up to six weeks ahead of sowing a following crop, so it shouldn't get in the way of any barley drilling. We have been experimenting with companion cropping for a while to try to help our OSR get away from flea beetle, so IPM3 was another logical element."

Paul Pickford says there was some debate around the IPM4 no insecticide use action.

"Paul gave up spraying beans for bruchids years ago, has virtually given up doing so for CSFB and doesn't generally have serious problems with BYDV. But for flexibility and safety – just in case – we opted to commit only half the arable area. After all, within the three-year SFI agreement, we are able to

## THE AGRII 3-STEP SFI PROCESS:

**STAGE 1** – Focus on the easy wins

**STAGE 2** – Take advantage of the obvious areas

**STAGE 3** – Time to do some homework

increase the area to 100% or cut down by 50% in the following years. So, it's worth not over-committing to start with."

"The same applies to the rotational area of NUM3 legume fallow we've put into our plan. This fits in nicely as an extra break in place of beans or oilseed rape, taking the pressure off OSR establishment in a difficult year and giving a great entry for milling wheat."

"It means a fair level of income foregone from this area, but it should deliver a decent gross margin of around £480/Ha while giving Paul the flexibility to drill it in the spring, having sprayed off an overwintered stubble or cover crop to help with blackgrass management."

## Carbon payments are increasingly important

Even though it will only recover a third of their original BPS entitlement, Paul Wilson and Paul Pickford see the 2023 scheme as an important opportunity they need to seize in the post-BPS world, with carbon payments increasingly important.

"It's early days yet, but our initial benchmarking with a sophisticated carbon certification system across 181 Ha of ground in very good condition here at Larkstoke Farm shows our regime is sequestering an average of 5.04 t/Ha of CO<sub>2</sub> eq. annually," says Paul Wilson. "Based on current carbon certificate rates, it would have earned us a payment of £130/Ha: £104/Ha paid in the following year with £26/Ha held over for the future as a 'loyalty bonus'."

"While all our ground isn't capable of delivering such a good sequestration performance, we are conservatively budgeting for a return of over £60/Ha (before bonus) from the 755 Ha we currently have in the scheme for payment in 2024 once all the auditing is completed on our 2023 season. This looks like matching the return we will get from SFI, putting us in a far better place overall."

Paul Pickford adds "With carbon credits already generating an average annual payment of £55/Ha for the UK farms involved they are a particularly exciting opportunity. It is an annual scheme, paying us for what we actually achieve each year through a well-validated process generating carbon credits that are only sold to food and fibre producers, so we are not providing off-setting excuses for other industries."

"As BPS disappears, everyone will have to look to these and other opportunities to diversify their income alongside what the Government is prepared to pay for 'public goods'. At the same time, of course, I invariably find most farms have considerable capacity to improve their finances through restructuring their capital expenditure, more than anything else."

"In everything we do, though, I have no doubt that careful planning and the greatest possible flexibility will be the primary requirements – not least with the extent to which both our climate and markets are changing. In this respect, I see the new SFI scheme offering something for every farm and carbon 'insetting' programmes like the one we are involved with working well alongside it."





# 03 DEFRA SFI & CS Payments

## DEFRA Secretary announces fresh SFI and CS payments, including for Precision Farming, at the 2024 Oxford Farming Conference



- + **Scheme rates will increase by 10% on average.** Existing SFI or Countryside Stewardship agreements will have uplifts applied automatically.
- + **50 actions will be launched in the summer,** which will allow access to scheme funding for things like precision farming and agroforestry for the first time. The new actions improve the offer for all farm types, but especially those on moorland and grassland.
- + **Farmers will get paid more for existing actions** to maintain habitats, with the price of maintaining species rich grassland rising from £182 to £646 per hectare.
- + **More actions will be available for shorter three-year agreements,** allowing greater flexibility.
- + **Up to five multi-million-pound contracts,** with an initial value of up to £15 million, will be awarded to promote crop innovation.
- + From summer, there will be a **streamlined single application service** for you to apply for SFI and CS Mid-Tier actions.
- + SFI agreement holders who entered into an agreement in 2023 will be able to either upgrade their existing agreement or apply for, and enter into, a separate 2024 agreement.

Specifically, DEFRA are introducing four new actions and supplements for businesses using precision farming.

Variable rate application of nutrients	<b>NEW</b>	3 years	£27 per ha	Precision farming variable rate technology is used to apply nutrients on arable, horticultural land or improved permanent grassland, to match the nutrient needs of crops for different areas within land parcels.
Camera or remote sensor guided herbicide spraying	<b>NEW</b>	3 years	£43 per ha	Automated camera-guided or remote sensing technology is used to precisely target application of contact herbicides to control weeds on arable land, permanent crops or permanent grassland.
Robotic mechanical weeding	<b>NEW</b>	3 years	£150 per ha	Robotic mechanical weeding technology is used for precision weed control on arable and horticultural land.
Robotic non-mechanical weeding	<b>NEW</b>	3 years	£101 per ha	Robotic non-mechanical weeding technology is used, such as laser or electric weeders, for precision weed control on arable and horticultural land.

Whilst we continue to wait for more detail on how to access these payments, be sure to check the latest information on Environmental Land Management payments and other schemes by visiting the DEFRA website or contacting Paul Pickford at [paul.pickford@agrii.co.uk](mailto:paul.pickford@agrii.co.uk)

If you aren't already taking advantage of RHIZA precision/variable rate nutrition and seed services and wish to, please contact us at [info@rhizadigital.co.uk](mailto:info@rhizadigital.co.uk). Alternatively, you can visit our website at [www.rhizadigital.co.uk/contact-us](http://www.rhizadigital.co.uk/contact-us)



# 04 Digital Technology Farms

## The Field of the Future: Digital Technology Farms

As part of the wider technology strategy being developed by the Agrii R&D team, this autumn, we are launching an innovative project involving the use of several connected technologies that can be used to enhance agronomic decisions at field scale throughout the growing season.



The Digital Technology Farm (DTF) trials are bringing the “field of the future” to our agronomists and growers, today! The DTF concept is built on the premise that data gathered from a variety of digital tools and technologies in a connected way can help to both support and drive decisions on crop management throughout the year.

The DTF concept provides Agrii the opportunity to develop, trial and demonstrate the latest identified technologies at the farm scale to determine their true benefits in a commercial setting in comparison with ‘field of today’ practices.

The project will allow the comparison of standard farm practices alongside data-driven decisions to understand how strategies can be integrated with one another to provide growers with a triple-bottom-line benefit. A key output from the DTF project is identifying

where the inclusion of technology within an agronomic strategy is most effective and quantifying what value different technologies can bring to farmers today.

Initially, the DTFs will be leveraging the use of Skippy Scout, in-situ soil nitrogen sensors and disease prediction models (appsforagri), with other technologies being identified for integration all the time. As part of the connected ethos, RHIZA are playing an integral part to the project through a number of key soil assessments as well as remote sensing.

The agricultural industry faces many pressures, including the requirement to justify our decisions for agronomic and nutritional inputs on crops. This is especially relevant when considering environmental targets and aspirations for UK agriculture to reach net zero by 2040. With this in mind, we

must understand how real-time data can help us to tackle the above challenges as well as provide economic and time saving efficiencies to farming enterprises.

We are in the process of setting up our DTF sites across the country, with Revesby Estate (Lincolnshire) being the first to trial the concept from autumn 2023. Our other sites will be at Montrose in Scotland and Throws Farm in Essex. Further DTF sites will be identified and developed, including within speciality and vegetable sectors, as part of the wider development plan going forward.

We look forward to sharing our insights at technology-specific open days in the summer of 2024. **If you have any questions, please contact Lucy Cottingham at [lucy.cottingham@agrii.co.uk](mailto:lucy.cottingham@agrii.co.uk) or Jonathan Trotter at [jonathan.trotter@agrii.co.uk](mailto:jonathan.trotter@agrii.co.uk).**

## GREEN HORIZONS 2023 in numbers



67%

of our customers recycle their farm plastic



41%

increase in sales for highly sustainable varieties (scored through our VSR trials)

We are targeting a

20% **NUE**

increase in nitrogen use efficiency by 2030



Since 2019, we have taken

253%

more soil organic matter tests



## RHIZA helps save customer time and hassle

# RHIZA

Alex Rogers, crop input specialist with the north of England team, explains how he used RHIZA to produce a soil management plan (SMP) that fulfilled the requirements of the Sustainable Farming Incentive (SFI).

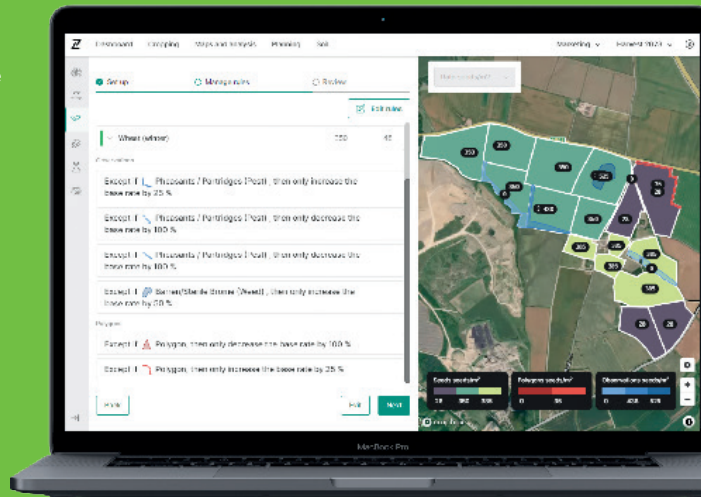
The SFI represents an opportunity to be paid for delivering positive environmental actions. Some of the practices required under the SFI are activities that many farmers will be undertaking anyway, either because they benefit their farming system or support a selfless desire to promote biodiversity across their farm. Being paid to do something you are already doing therefore, holds obvious appeal. The challenge comes in demonstrating that these actions are being fulfilled in such a way that satisfies the needs of the body willing to pay for them, in this case DEFRA.

We were approached by a customer in the East Riding of Yorkshire to produce the data needed to demonstrate compliance with the soil management requirements of the SFI. Initially this involved a series of soil assessments as part of the requirement to promote soil organic matter but was expanded to consider a comprehensive report that identified the actions required to protect all soils. With the River Hull bordering the farm, surface run-off and nutrient leaching were a serious concern and the actions identified had to reflect this consideration.

Using the digital tools in RHIZA the locations of the soil assessments were saved as observation points on a map of the farm in Contour. This means they are recorded for reference and can be accessed again if needed in the future. With the required soil data to hand, it was possible to identify those practices that would protect the soils. The light friable soil of this farm is especially vulnerable to wind erosion and nutrient leaching, so retaining stubble and the need to avoid leaving cultivated land unworked were identified as action points. Where the topography of the land also raised the risk of erosion, this was highlighted as being at higher risk and further protective measures listed.

Much of the guidance that came from the assessment is established best practice and had already been adopted. This served to reassure the customer that many of the practices already in place were appropriate.

Perhaps more importantly, he had a clearly laid out report that identified the environmental risks and the measures employed to mitigate them that could be used as evidence of compliance if needed. That this was a service RHIZA could provide, removed the stress of producing his own report and saved him valuable time that could then be focussed elsewhere.



# 100%

of our sites are powered by renewable energy



# We raised almost £2,000

for selected charities through our Miles in May wellbeing challenge



# 100+

customer facing employees received FCN wellbeing in agriculture training



# 400,000

electric vehicle miles covered in 2023

## Priorities for farm-saving your spring barley



Following the atrocious conditions last autumn, most certified spring seed was sold out well before Christmas. Even then, the eventual supply of certified seed is still subject to germination, and there have already been some widespread issues caused by the difficult harvest last year.

That leaves farm saved seed as almost the only possible option for growers still needing to source spring crops to drill fields. Demand is expected to increase by 30-40% on a typical spring cereal season. So, it is worth considering what growers need to do as a priority.

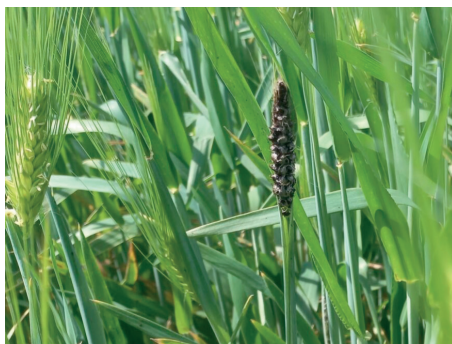
### Germination Tests

It is important to get a full germination test by a recognised laboratory. This is especially where grain is used that may not have been originally earmarked for seed. In this instance, it is important to tell the seed lab if glyphosate was applied.

### Disease and Treatment

Loose smut remains the priority of disease control, and there is clear evidence to show that the level of loose smut activity you get from ipconazole is better than prothioconazole so that puts Rancona i-Mix as the top technical treatment (Figure 1).

While crops can pick up net blotch from neighbouring crops, the seed-borne route is also quite important in spring barley. We have shown that the ipconazole/imazalil combination in Rancona i-Mix gives the best control (Figure 2). Other diseases like leaf stripe are rarely found nowadays, and seedling blights tend to be less of a problem as spring crops are generally drilled into warming soils.



Loose smut (photo credit: Certis Belchim)

Figure 1

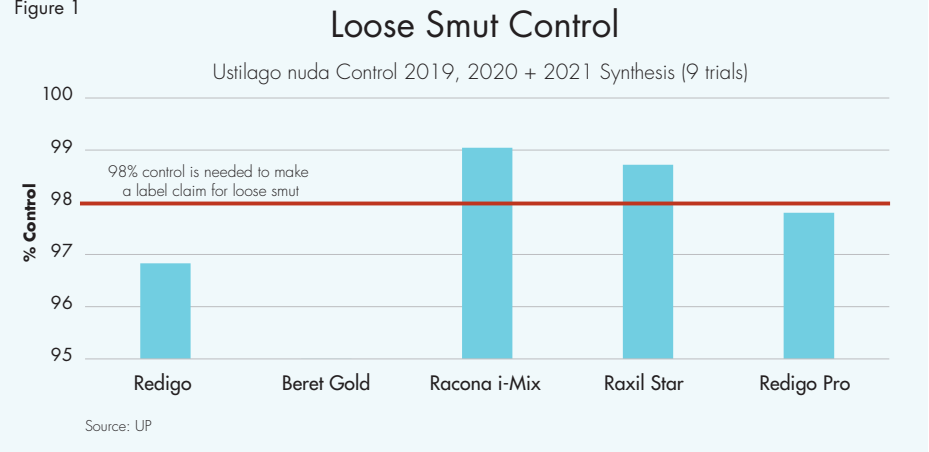


Figure 2

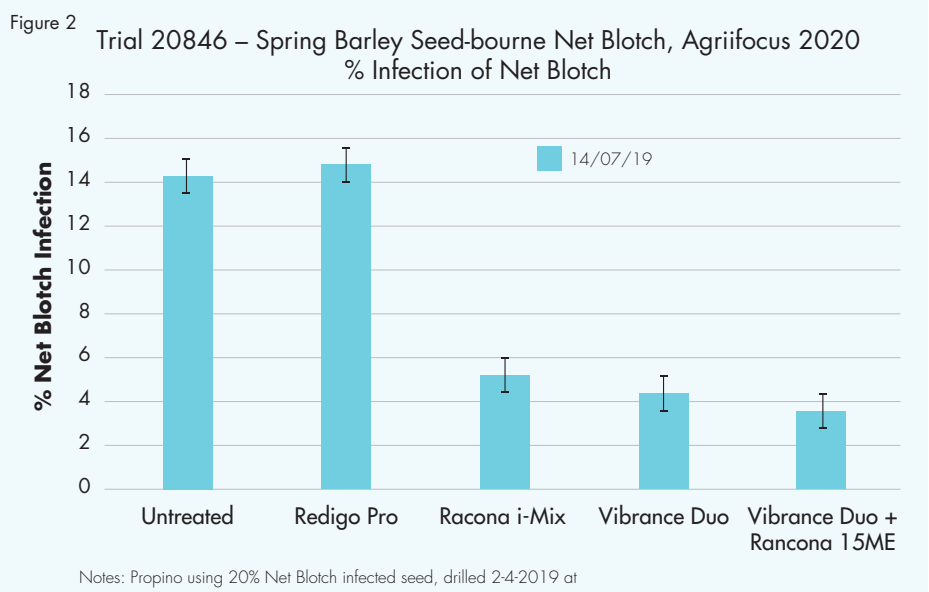
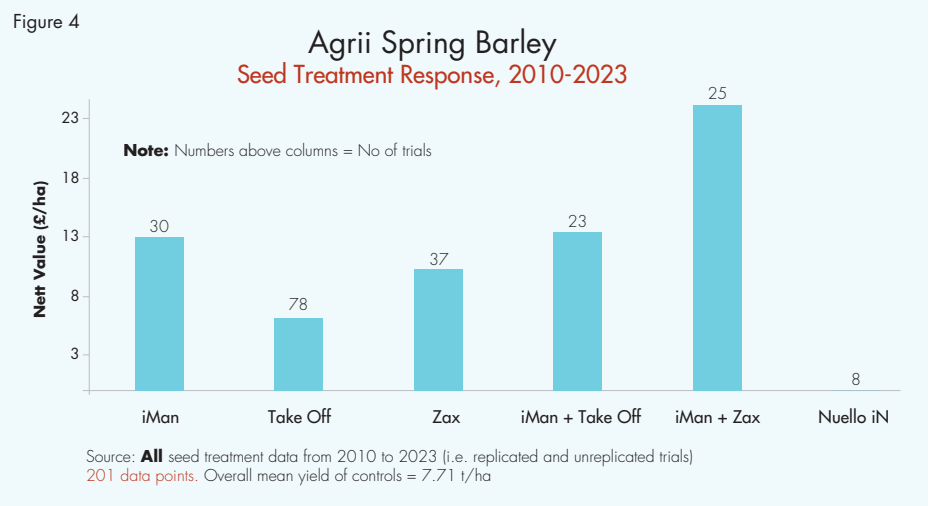


Figure 4

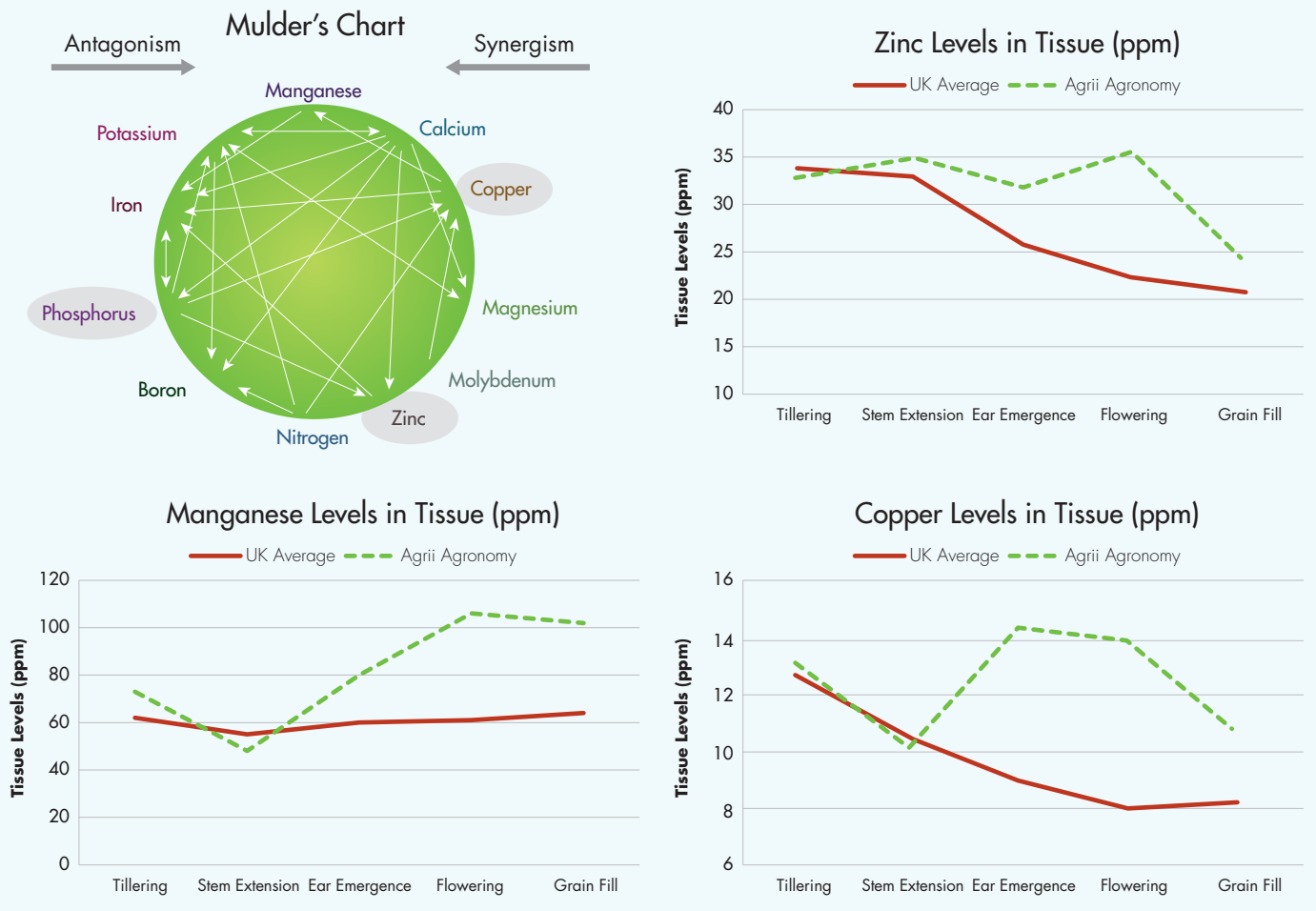




# 07 Farm Saved Seed

Figure 3

## Technical Seed Treatments



Last spring, around 14% of farm saved spring barley seed was not treated with fungicidal seed treatments, and these crops will be most at risk from seed-borne diseases. It is crucial seeds are tested for disease because they can go from nothing to causing significant crop losses within a couple of seasons.

### Crop Nutrition

Nutritional seed treatments should also be considered. Some ground breaking research by Agrii and Lancrop Laboratories identified through analysis of thousands of tissue samples at different growth stages that spring barley clearly required adequate manganese, zinc and copper during the early stages of growth (Figure 3). This was the basis for Agrii's product range of high-load seed treatments, i-Man (manganese), Zax (Zinc) and Fielder Copper.

Spring barley has always been grown on lighter soils and calcareous soils to achieve lower nitrogen levels historically preferred by the maltsters. Manganese has always been used on these soil types because of soil deficiency or lack of availability.

Since 2013, spring barley has been grown more widely because of blackgrass

pressure and few spring-rotational options. It generally goes for feed, but some contracts can accept higher grain nitrogen. Results from over two hundred trials show that these crops respond to i-Man despite no apparent deficiency or lack of availability.

The evidence suggests that i-Man should be used as standard and i-Man plus Zax for an additional boost to yield (Figure 4). While these nutrients can be applied later on, seed treatments help to bridge the hunger gap that all spring crops experience and get them off to a better start.

### Seed Rate and Seed Cleaning

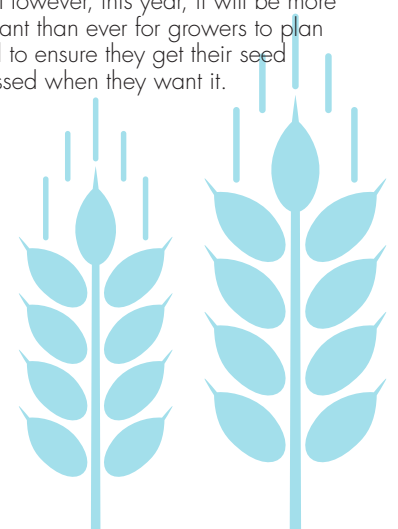
Farm-saved seed is not under the same restrictions as certified seed, so where germination is less than 85%, seed can still be used, and the seed rate adjusted to account for any losses. Of course, one of the other advantages of farm saved seed is the ability to process the seed crop more intensively to select a bigger and bolder sample. Any screening losses can simply be returned to the heap.

It is for all the reasons stated above that farmers should plan their seed requirements carefully rather than being tempted to barn-

dip by taking grain straight from the heap. In the UK, we enjoy the benefits of good seed health largely due to the certified seed industry and a professional approach to farm saved seed.

### Planning Ahead

Agrii also has good upside seed treatment capacity for the upcoming spring with its large fleet of mobile dressers and flexible staff. However, this year, it will be more important than ever for growers to plan ahead to ensure they get their seed processed when they want it.



## Seed select: unearthing top varieties for autumn



With the launch of the new recommended list for cereals and oilseed rape in November 2023, Agrii's seed experts Rodger Shirreff, national seed business manager, John Miles, seed technical manager, and David Leaper, seed technical specialist, share their opinions on this podcast and look into what's new.

We have brought you the key take homes below, also covering what this means for seed availability and the grower.

### Understanding the Value of the Recommended List

The discussion begins with a deep dive into the significance of the recommended list. Rodger sheds light on its crucial role in identifying the gross output potential of crops and managing associated risks.

*"The list is very good at identifying the national potential yield of varieties," Rodger Shirreff.*

*"The ultimate aim (of the RL) is to ensure there are a smaller number of high-quality varieties that growers can choose from," John Miles.*

### Key Wheat Varieties for the Coming Season

The experts transition to discussing key wheat varieties for the upcoming season. Rodger highlights SY Cheer in Group 1, Bamford in Group 3 soft, and Blackstone in Group 4. The importance is placed on quality, disease resistance, and end-market suitability.

*"Bamford topped Agrii's trials across all varieties. It is recommended for distilling, and combined with its yield, I expect it to take a lot of market share, especially in the North," Rodger Sherriff.*

*"Some of the varieties recommended in the last few years have had a significant agronomic weakness. However, if you look at Beowulf, Blackstone or Bamford, you are very hard-pressed to find anything to worry about. Not only are they high yielding, but they have solid all-round packages," John Miles.*

0:36 - 1:25

8:20 - 10:16



1:33 - 2:43

4:59 - 6:55

10:47 - 11:22

### Agrii's Independent Work

John takes us on a deep dive into Agrii's independent trials. He underscores the importance of on-farm conditions and different input regimes, providing a valuable regional perspective. David also adds his thoughts on the recommended list's benchmarking value while highlighting gaps in information related to growth habits and pest resilience.

*"The Agrii trials supplement the RL data. We look at things like lodging with varying seed rates and competitiveness against black grass," John Miles.*

*"There are some gaps in the RL data. The biggest one with oilseed rape has been growth habit and how varieties can cope with the burden of adult and larval damage from CSFB," David Leaper.*

### Review of Last Year's Varieties

The conversation shifts to a review of last year's recommended varieties, specifically focusing on winter wheat. Rodger discusses successful varieties like Dawsum and Champion, stressing the importance of growers being aware of potential weaknesses, such as standing ability.

*"There was a big interest (in Dawsum), and it turned out to deliver the goods for farmers. The limiting factor (to its market share) was seed availability," Rodger Sherriff.*

*"There is no dispute of Champion's yield potential or Septoria resistance, which has contributed to its strong performance. It's not a completely safe package (because of the lodging risk), but there are a lot of positive points," John Miles.*

### The Role of Chemistry in Crop Protection

Tramlines host Tony Smith prompts John to discuss the importance of chemistry in protecting crops. John highlights the need to assess specific disease pressures and adjust chemical applications accordingly to address potential weaknesses in varieties.

*"Even with varieties like Extase, there is still a yield response (to fungicides) of 1 t/Ha," John Miles.*



To discover the best place to start with varieties for this autumn, listen to the full podcast here.

Claim 1 BASIS and NRoSO point for listening to this podcast.

Email [info@agrii.co.uk](mailto:info@agrii.co.uk) with your membership number, full name, postcode and date of birth.



## Oilseed Rape

In this section of the podcast, Agrii's ongoing research efforts to fill these knowledge gaps are discussed. He discusses the dominance of Limagrain in oilseed rape breeding, highlighting successful traits like turnip yellow's virus resistance. Newer varieties, including Armada, Academic, and Adeline, are introduced to address weaknesses in older varieties like Aurelia.

*"Armada, Academic and Adeline are taking (OSR) varieties forward. We took the decision three years ago to market Auckland, which is well-positioned on the list, and we don't see much of a difference between that and the new LG varieties versus some older ones like Aurelia," David Leaper.*

*"Interest in schemes offsetting the risk in crop establishment has driven variety choice more so than new varieties. We anticipate our big sellers last autumn like Ambassador, Auckland, Exsteel and INV1035 will remain (the top varieties)," David Leaper.*

3:02 - 4:34 & 15:48 - 21:24

## Seed Multiplication and Ensuring Seed Availability

The experts discuss seed multiplication and provide insights into Agrii's crop plan, featuring popular varieties like Skyfall and Bamford. To ensure seed availability, Rodger advises growers to order seeds early, engaging in discussions about preferences and needs. Early planning is crucial to secure the desired varieties for successful crop management.

*"Our crop plans have had to change because of the weather, and we are still planting (seed crops). Some of the older varieties are still big players for us. Dawsum and Champion have large areas, and we still sell more Graham as a proportion than the market overall," Rodger Sherriff.*

*"If you want to optimise your black grass competition, then it has to be a hybrid to affect the seed head number, size and seed return. Kingsbarn is still very popular, and we have Armadillo, which didn't make it to the list but has good data supporting its black grass competitiveness," John Miles.*

21:25 - 26:56

13:47 - 15:47

27:29 - 28:49

## Winter Barley Overview

The focus shifts to winter barley, with John providing insights into varieties like Tardis and Caravelle. The conversation touches on grain quality, disease resistance, and standing ability.

*"In the RL data, there is not much between them (Caravelle and Capitol). In our trials, there is a 5% untreated yield difference in Caravelle's favour. Capitol will be of interest, but to us, Caravelle is the better all-round variety and is in the market sooner," John Miles.*

*"There is a new BYDV recommended variety, which is a hybrid barley. There isn't a two-row option as yet, but (growers) do have a new hybrid BYDV six-row now available (to go alongside Feeris)," John Miles.*

## Utilising the Recommended List

John encourages growers to create a prioritised wish list of characteristics they require in a variety. Engaging with local iFarm events and understanding the priorities for their specific regions will help them make informed decisions, even with the abundance of varieties in the market.

*"List the characteristics you aren't prepared to budge on. By the time you have gone through that list, there is probably only one or two to choose between," John Miles.*

*"Don't always select a variety just because it is the highest yielding. Often, the best varieties sit in the middle of the pack and are supported by a much broader range of characteristics that will deliver longer term," David Leaper.*

## Agrii agronomist wins major industry award

Todd Jex won Arable Advisor of the Year at the Farmers Weekly Awards by being at the forefront of the latest regenerative farming practices. The award is the culmination of a journey he began almost a decade ago when his eyes were opened to a different way of farming following a visit to a pioneering farmer.

Todd is based in Wiltshire but with clients across Dorset, Wiltshire, Hampshire and the Isle of Wight. The proportion of his clients utilising no-till and regenerative practices has increased from the first farm approaching him in 2016 to almost 70% this season.

Although he did not grow up on a farm, Todd spent a lot of time with his grandfather, who managed a mixed arable and dairy farm on the Dorset – Wiltshire border. Today, his grandfather's approach to farming would be called integrated crop management (ICM), but back then, it was considered just good crop and animal husbandry.

"Rotational ploughing, crop rotations and what he called 'feeding the ground' were essential parts of his philosophy," says Todd. "He was my biggest influence until I went to Harper Adams to study agriculture, agronomy and crop science.

"I did a placement year working in R&D for another agronomy company and spent much of my time working on trials examining blackgrass control. From this, I became fascinated by the cultural control options for blackgrass management, like direct drilling or rotational ploughing, and followed it up with a dissertation on the subject."

When Todd joined Agrii's forerunner, Masstock, he helped with trial work alongside training to be an agronomist. Agrii supported his academic and practical training, with Todd completing his BASIS Diploma.

At the start of his career, most farms in the area were practising mill-till or rotational ploughing with no direct drilling. Ideas began to form in his mind about how different approaches to farming involving direct drilling might help farmers tackle blackgrass.

Everything changed following an introduction to Paul and Oliver Harris. They had been doing some direct drilling with a Claydon machine but wanted to move to a true no-till system using a disc direct drill and were looking for an agronomist to support them with this change.

"The reason for the switch was for blackgrass reasons and also improving soil health, which I had not encountered before. They arranged for me to visit Tony Reynolds, who had adopted no-till ten years earlier.

"Even as I was approaching the farm, I noticed how different it was because there was significantly less blackgrass on his fields than others I had driven past to get there. Tony was fascinating, enthusiastic, and happy to share his knowledge and experiences.

"I was shown some research a university had been doing on his farm examining soil health and water infiltration rates compared to a neighbour's miltilled farm. I couldn't believe what I was watching; Tony's land was absorbing the water as fast as they could pour it, and they stood waiting for the neighbour's to drain.

"That day was a massive influence on me. Combined with my past experiences and the Agrii research I saw, especially at their Stow Longa site, I became increasingly interested in soil health. I began reading books, attending events, and listening to podcasts on the subject. By working with Paul and Oliver Harris on their farm, I could put much of what I learned into practice," explains Todd.

The Harris family held an open day at their farm to show what they had been doing with Todd, which helped some of Todd's other customers go in their direction a year later. This proportion has gradually built up to over two-thirds of his area.

In the future, Todd believes almost all the farmers he deals with will be utilising a direct drill system, and an agronomist's role will become even more involved in all elements of farming. This increased involvement will be balanced by new A.I. and digital technology helping with existing tasks.

"Agronomy is already multi-faceted, but it will be even more so in the future. The agronomist will have to spend more time with farmers advising on aspects of crop production they do not currently do. Things like examining soils for compaction or advising on machinery will become the norm.

"I was delighted to have just made the Arable Advisor of the Year final, knowing that one of my customers had taken the time to nominate me. My colleague Neil Harper was also a finalist. I believe that is the first time any company has had two employees up for the award in the same year.



"I am incredibly proud to have won the award, and so are my family. It is always something I hoped to have a chance to win at some point in my career. I am a finalist for the Young Agronomist of the Year at the National Arable and Grassland Awards in February, which is another exciting opportunity."

Congratulations also go to Neil Harper who was a finalist in this award category



### TOP TIPS WHEN STARTING YOUR REGENERATIVE FARMING JOURNEY

- Sort any drainage issues before starting.
- Take the time to learn about cover crops.
- Accept that heavier soils will take longer.
- Manage trash and be prepared to deal with larger slug populations.
- Pay attention to the small details, like tyre pressure.



# 11 Farmers Weekly Awards



## CASE STUDY: REAPING THE BENEFITS OF A DIFFERENT APPROACH

George Fraser of A&R Fraser has worked hand-in-hand with Todd to adopt a direct drill system, transforming their farming operation. Their journey began when George's home farm was sown using a Weaving GD direct drill, and cover crops were integrated into the rotation.

A&R Fraser contract farms 3,000 acres across Wiltshire and Dorset. As well as contract farming, George's brother Jonny runs a successful digestate contracting service for local farmers, and they have a herd of beef cattle. A rotation of winter wheat, spring barley, spring beans, and oilseed rape belies an astonishing performance highlighting what can be achieved through ICM and regenerative practices.

"We first started on our farm to test the system," says George. "We then started suggesting the new approach to our customers because we could see the results. Our landowners were quick to get on board. Now, it has gone from us suggesting it to it being demanded. People say there is a big yield drop-off when you switch, but we have never seen this."

"The main change we have made is to move away from cultivation to a focus on soil health to manage compaction and improve soil structure. We always start by measuring the soil when we bring new land into the system," adds Todd.

The move from min-till and ploughing to direct drilling has drastically cut George's fixed costs.

He has calculated that they are 40% lower. George retains a low disturbance subsoiler for primary cultivation when needed, unlike some regenerative farmers who strictly adhere to a no-till system. He believes this can be necessary for up to five years on heavy soils to manage soil compaction.

It is not just fixed costs that have been reduced. The focus on soil health also means they are getting more yield from fewer inputs. Using slurry and digestate, combined with moving to liquid fertiliser and using inhibitors, has halved inorganic nitrogen use.

## Farmers Weekly Awards winners

It was a night of celebrations at the Farmers Weekly Awards in October as Agrii customers returned with Arable Farmer of the Year and Diversification Farmer of the Year.

Neil White farms Greenknowe Farm in the Borders and won Arable Farmer of the Year. The farm totals 238 Ha with a diverse rotation of winter wheat, winter malting barley, HEAR oilseed rape, oats, beans and spring malting barley, taking advantage of local markets to deliver premiums.



Credit @somerville\_captures

The judges were impressed with his transition to a strip-till regenerative system. This has enabled Neil to reduce his costs and increase his yields simultaneously. The system has secured the profitability of Greenknowe Farm and allowed Neil the time to manage it with him alone. The Borders is known as an area of high-yielding arable farms, but the variable weather means more traditional tillage-based systems predominate. Neil has become a local expert on strip-tillage and is always open to sharing his knowledge. He recently talked at a local i-Farm event about his farm and the lessons he has learned.

Agrii agronomist Iain Sanderson supports Neil with agronomic advice alongside another agronomist. "I am delighted Neil won Arable Farmer of the Year; it is well deserved," says Iain. "I have supported Neil since he began to adopt his new system nearly ten years ago and have seen his hard work pay off."

The winners of the Diversification Farmer of the Year were Johnny and Clare Clapp, who farm at Red Linhay in Devon. An anaerobic digestion (AD) plant, straw pelleting business, self-storage unit and business park all support a thriving 1,000 Ha mixed beef and arable farm.

The Clapp's businesses are self-supporting. Some of the arable land is used to produce feedstock for their AD plant, with the digestate spread back onto the fields. Straw from their wheat crops supplies the straw pelleting business, sold to pet suppliers as cat litter.

The business park and self-storage enterprises take advantage of their convenient location off the M5 and support the whole business with a consistently profitable revenue stream. Agrii supplies the business with the bulk of its crop input needs, with Agrii agronomist Mark Smyth as their primary contact.

"The Diversification Farmer of the Year Award reflects all of Johnny and Clare's hard work building their business over the years. I look forward to supporting them as their business continues to grow," says Mark.

## Arable Farmer of The Year 2024 HAVE YOU APPLIED?

Agrii are sponsoring the Arable Farmer of The Year award at the Farmers Weekly Awards in 2024.

Applications are open now to all individuals who feel they harness and protect the land's natural resources to create a truly sustainable arable business in the face of ever-increasing market and environmental challenges.

Closing date for applications is 30th April 2024.

**APPLY NOW!**



# 12 Scottish Agriculture

## From soil to harvest: Agrii's commitment to Scottish agriculture

With a team of almost 50 agronomists supporting farmers nationwide, Agrii is Scotland's leading farm advice, technology and supply business. Its complete service for Scottish farmers represents the culmination of decades of investment from Agrii and its preceding companies.

We spoke with Agrii's Scottish business managers to determine what this investment offers farmers and their thoughts for the future.



When Agrii was formed in 2012 following the merger of CSC Crop Protection, UAP and Masstock by its parent company, Origin, it inherited a strong presence in Scotland from the three businesses. Overnight, Agrii became the market leader with a well-spread network of depots, research and development sites and a large, experienced team.

"There's a long history from all the different companies that have made up Agrii, and I think farmers see the Agrii agronomists as a trusted source of information because of this," says Greig Baird, Agrii's business manager for the Lothians and Borders. "We have the technical backing of a considerable amount of research data and an experienced team to utilise it.

"Scotland has always accounted for a large proportion of Agrii's overall business in the UK, so we have a strong focus here. Similar companies tend to concentrate their trial work in the extensive wheat-growing areas in the East of England, but Agrii is different.

"The most important crops in Scotland, like malting barley, potatoes and vining peas, also have priority within Agrii nationally. Our advice and research must be relevant for Scottish farmers and the same for our decision-making. All the business managers in Scotland report directly to Agrii's board, meaning the Scottish market is well represented within the company's hierarchy."

Agrii has five iFarms and a technology centre in Scotland. The iFarms are hosted by partner farmers; they showcase the latest agronomic innovations and provide opportunities to discuss

how they can be implemented with local farmers. Technology centres have more extensive small plot trials and are used to generate the large datasets that drive Agrii's decisions.

The local cropping and agronomic challenges drive what is tested at the iFarms. "We have open days where the local farmers come to see the research. At the end of the season, we have a reports meeting to review the results from the work they witnessed at the demos. Farmers always appreciate local data on crop protection programmes and varieties, so this work is important to them," adds Greig.

"We always get well over 100 farmers visiting our iFarm demo near our Inverurie depot in Aberdeenshire," says Justin Taylor, Agrii's business manager for Northern Scotland.

We also have an iFarm in the Black Isle, which is well supported despite not being in a big arable area. A farmer can read the AHDB Recommended List, but there is nothing like seeing how varieties perform locally. iFarms are a key part of what Agrii does."

Sprayer and liquid fertiliser contracting is a big part of Agrii's business. At peak season, they are running over 20 sprayers covering a considerable acreage of crops.

"In my area, it is particularly important; we are operating 12 sprayers," says Colin Rennie, Agrii business manager for Central Scotland.

"We have our own liquid fertiliser manufacturing plant at Kincardine Bridge, and a lot of what we produce there is also applied by Agrii as an overall service.

"Many farmers do not have the time to spread liquid fertiliser or do not want to spend the money adapting their equipment. However, I have always found that once farmers start using liquid fertilisers, they rarely return to what they did before. When compared to granular fertiliser, the speed of nutrient uptake is night and day.

"Agrii's sprayers cover all combinable crops. There are also a lot of potatoes grown in my region, so this is also a priority. We have two large vegetable growing groups where we are heavily involved in servicing them."

Agrii announced a collaboration with the grain marketing specialist, Vitterra Limited, several years ago. This has enabled them to connect agronomy and crop inputs with a farmer's grain marketing. As the food chain looks to tackle challenges like net zero, this is increasingly important for compliance and to seize any premium opportunities for produce grown under specific farming systems like regenerative farming.

"I am excited about our partnership with Vitterra; they provide our clients with many opportunities to market their grain locally and nationally. This was the missing piece of the puzzle for Agrii to offer a full service, but we certainly have a strong partner now," explains Colin.

Changing weather, consumer demands, support payments and increased legislation create a need from farmers for advice, and the three business managers agree that Agrii is well-equipped to help farmers tackle them. The solution will increasingly be driven by a move to a more systems-based approach with integrated pest management at its core.

### Future Farming Expo – October 2023

The Scottish agronomy and RHIZA teams travelled to Aberdeen to attend the very first Future Farming Expo, hosted at P&J Live. The show demonstrated a diverse range of businesses from glamping to farm machinery, and attracted a wide-ranging variety of visitors. It was a great way to make waves in the local area and generated a great deal of interest in what Agrii and RHIZA can offer local growers (see right).

### AgriScot – November 2023

Agrii's attendance at AgriScot was much appreciated by local growers, with members of the team on hand to offer advice on all areas of Agrii's offering from agronomy to forage, precision to animal health. It was a very busy and successful show and we hope to attend again in November 2024!







**Agrii is part of the team here and it really works for us as a business.**

Jimmy Daig, Farm Manager, Keithick Farms

Agrii has invested in services and research to help its agronomists advise and supply farmers with every facet of their system. Master Seeds and Master Leys are market leading brands championing the latest genetics to growers, and Agrii is even developing proprietary varieties in partnership with Secobra. They also launched RHIZA, the only fully integrated digital agronomy and precision farming service for arable, grassland and high-value crops.

“One of our biggest areas of growth in the last few years has been with mixed livestock and arable farmers,” says Greig. “We now have an Agrii product range of animal health and nutrition products. It complements our longstanding range of forage seeds. 2023 marked the 50th anniversary of the Master Leys grass seed brand.

“We need to think about where the next yield gains will come from, and over the next five years, I am incredibly excited about the increased use of technology in agriculture. The use of nutrition within agronomy programmes will become a more important element, which will help offset the reduction of crop protection.”

“The industry is changing, and farmers need more support than ever,” states Colin. “We have a big footprint of agronomists advising on farms across Scotland that can help farmers, not just with agronomy, but with all the other changes happening. We have invested in building the complete offer for farmers, so our team can provide help for a farmer with everything they need.”

A decade ago, the agronomy industry faced a staffing crisis, with many agronomists close to retirement and few young people entering the profession. To complement their investment in new technology, Agrii has also worked hard to train new agronomists for the future.

“At 47, I am the oldest in my team,” says Justin. “The average age is much younger than what is typical. We have built a great team of talented agronomists who buy into the industry’s future direction and understand how to get the best out of new technology.

“A continuous investment in research and development will be vital for the future; this is what Agrii does best. There is no other business doing the amount of research we are doing across Scotland’s arable area, and with it referenced against a research network around the United Kingdom to give it context.”

## Spring Seed Yearbook

### The must-have variety guide for 2024

Welcome to the 2024 edition of the Agrii Spring Crops Yearbook, your go-to resource for information on topics related to spring seed.

This year, we are delighted to report a significant increase in the number of customers benefiting from our reserved seed offer.

At Agrii, we take great care in selecting varieties that are in high demand, ensuring their safe storage, and early preparation during the summer months to ensure your seeds are ready to go. It is certainly one less hassle for the busy period.

If you have any questions, please don’t hesitate to get in touch. Have a great season, see you at the Summer events.

View the Yearbook on your laptop or mobile.

Responsive. Interactive. Access anywhere.



**John Miles**  
Seed Technical Manager



#### LOCAL CONTACTS

A	Lincoln Seed Plant	01522 513351
B	Finnmere Seed Plant	01280 848848
C	Moreton Seed Plant	01277 899700
D	GB Seeds	01284 729200
1	Lauren Rettie	07964 510067
2	Harriet Blakey	07593 385979
3	Rebecca White	07721 128172
4	Matt Richardson	07887 547287
5	Samantha Gallagher	07841 777026

6	Gavin Taylor	07973 854046
7	Sophie Dillon	07826 956226
8	Poppy Bunting	07967 593776
9	Rob Stuart	07563 390273
10	Ian Davy	07890 550559
11	Angie Baker	07796 193895
12	Will Sanderson	07980 943538
13	Cas Sandy	07970 641741
14	Louise Rawlinson	07721 788943

#### SEED COMMERCIAL TEAM

Lee Robinson	07860 523109
Executive Director of Seed	
Rodger Shirreff	07831 188500
National Seed Business Manager	
Louise Rawlinson	07721 788943
Seed Commercial Operations Manager	
Lauren Rettie	07964 510067
Regional Seed Manager – Scotland	
Jess Preston	07870 546599
Seed Commercial Operations Support	
Mark Taylor	07836 527251
National Farm Saved Seed Business Manager	
Ben Lowe	07966 533374
National Forage Product Manager	
Adam Simper	07767 007021
National Grass, Roots and Environmental Seeds Manager	
Rebecca White	07721 128172
Specialist Break Crop Product Manager	

#### SEED TECHNICAL TEAM

John Miles	07855 130439
Seed Technical Manager	
David Leaper	07972 188228
Seed Technical Specialist	
Simon Hobbs	07770 643365
Cover Crop, Environmental & Wildflower Seeds Technical Manager	



## Lupins prove a good replacement for soya meal

Lupins have long been promoted as a quality protein for ruminants and so they are proving for one Derbyshire dairy farm.



A higher quality protein than either peas or beans and featuring a similar amino acid profile to soya, lupins are kind on the rumen and easy to incorporate into the diet, so why are they not more popular with livestock farmers? A lack of arable land on most livestock units may be one reason but to those who have tried, they have more than rewarded the time and effort invested.

Lupins are not a new crop, explains David Thornton, Agrii feed and nutrition specialist, but their nutritional profile means they are often promoted as a sustainable alternative to soya (see Table 1).

"Their superior nutritional profile compared with other combinable legumes means they have been on the cusp of a breakthrough for decades, but poor yield stability and a disconnect between arable farmers able to produce them and livestock farmers wanting to consume them has served as a barrier to their adoption," he says.

Such hurdles are no longer the deterrent they once were. Variety trials by Agrii have identified those that mature earlier which has extended their suitability outside the south and east while yields too are now far more reliable. An appreciation for the role sustainable feed sources play in supporting efforts to reduce the carbon footprint of agriculture too has strengthened their appeal.

"Lupins are easier to feed than other grains and without the health issues that come with some sources of protein. They are also highly suitable for young ruminants and can be fed from 15 weeks through to maturity in the case of lambs or fattening cattle," Mr Thornton says.

Table 1: Nutrient profile of grain legumes

GRAIN LEGUMES	CRUDE PROTEIN (%)	OIL (%)	CRUDE FIBRE (%)
<b>Lupins</b>			
<i>Lupinus angustifolius</i> (narrow-leaf/blue)	28-38	5-7	13-17
<i>Lupinus albus</i> (white)	34-45	10-15	3-10
<i>Lupinus luteus</i> (yellow)	36-48	4-7	15-18
<b>Soybean meal</b>	48.0	2.8	3.5
<b>Faba beans</b>	29.0	1.5	9.0
<b>Peas</b>	24.9	1.5	19.5

Reference: LUKAA, 2015. Soybean meal data from Agrii.

In the rearing stage, lupins are often favoured to grass or maize silage because of their higher protein content while in finishing rations, they are a good complement to maize silage which is higher in energy, but lower in protein.

For wholecrop silage, dry matter yields are on a par with maize, typically 15t DM/Ha while grain yields vary depending on the type grown. White (semi-determinate) lupins can yield up to 5 t/Ha while blue (determinate), which tend to suit conditions in the west and north, yield 3.5-4 t/Ha.

"The grain is high in digestible oils, which is why livestock tend to look well on them. This is a good complement to the starch-based energy of cereal diets," Mr Thornton adds.

Calculating the cost of growing and feeding your own lupins can be difficult as it depends on how you want to appraise them. In most cases, explains Mr Thornton, it makes sense to cost them as a soya replacement, but appreciating that it doesn't cost anywhere near this to produce.

"The best use of lupins is probably in the dairy ration. The oil content is higher than soya meal (which has been extracted) and while you have to feed about 20% more, they are cheaper to grow. With soya on farm for about £520/t, lupins would be worth about £420/t on an equivalent basis but are reasonably cheap to grow," he says.

If there is one note of caution it is to ensure the crop is harvested when the pods are slightly soft if header losses are to be avoided.

"Unfortunately, the volunteers that follow can't be grazed as the plant contains oxalic acid (an anti-nutritional found in nettles and some forage crops). Oxalic acid can bind with dietary calcium and magnesium to form insoluble Ca or Mg oxalate. In ruminants, health issues occur when animals consume large quantities of oxalate-rich material, so combining before the pods are brittle is advisable," Mr Thornton says.

### Good fit with arable and dairy

For Derbyshire arable and dairy farmer Richard Harris, the blue lupin variety Primadonna, has replaced soya as the source of quality protein, meant an end to the feet and udder problems associated with large quantities of faba beans and provided an opportunity to clean up some of the weedier fields at Old Hall Farm, Alkington.

"Lupins present a range of benefits to us," Mr Harris says. "First, they are a viable alternative to imported soya which means we can advertise our milk as having a lower carbon footprint. As a business selling 15,000 litres a week direct to consumers it is important that we are seen to be moving with the times. Second, the cows are generally healthier with less feet and udder problems. Third, the lupin, faba bean and rapemeal blend we feed is about £100/t cheaper than the bought-in equivalent containing soya, so there is a significant financial saving too," says Richard Harris.

Incorporating them into the diet was as simple as providing a nutritional analysis to his ration consultant (see Table 2).

"Lupins don't tend to feature in many ration programmes, so the nutritional profile had to be entered manually. From here it was about finding the right ratio of lupins to faba beans to balance the ration, but because they are easy on the rumen, we can afford to be fairly flexible with the inclusion rate," he says.

Table 2: Typical feeding plan at Old Hall Farm (cows giving 26 litres/day)

	FRESH	DRY
Grass silage (1st cut)	21.0	5.1
Grass silage (3rd cut)	7.0	2.62
Wholecrop wheat	7.0	3.74
Cold pressed rape	1.0	0.88
Maxcare Dairy Extra	0.150	0.147
Lupin/bean blend	3.5	3.03
Rolled barley/wheat blend	3.5	3.01
Emerald 18	2.0	1.73
<b>Actual intake (kg)</b>	<b>45.2</b>	<b>20.3</b>

Reference: Alkington Old Hall Farm.





Richard Harris (left) with Agrii agronomist Tim Coltman

The Harris family milks 200 Ayrshire and 30 Guernsey cows with a herd average of 6,500 litres per cow. The Guerneys are kept specifically to produce the higher butterfat milk favoured by those who enjoy channel island milk while the Ayrshires offer a tastier alternative to the Holstein-Friesian equivalent and offer a point of differentiation when selling direct to consumers.

"From the moment we went into dairy in 2013, our plan was always to develop the direct-to-retail business. Today, 75% of our milk production is sold direct to households or business users with the majority of it delivered via one of our four vans. We recently added cream and butter to the list of dairy products, with interest in these growing steadily," he adds.

Lupins, he believes, offered an opportunity to support the milk profile and benefit cow health without incurring extra costs. But what about growing them, haven't they taken the place of a crop delivering a higher gross margin?

Across 280 hectares (700 acres) of arable at Old Hall Farm, lupins are grown on just 20 Ha because the 75 tonnes produced is about enough to meet requirements.

As a break crop, lupins typically follow a second wheat. The opportunity they afford to clean up land is especially appreciated and this season they will go on ground with an emerging rye-grass burden as part of a wider effort to prevent this from becoming an established problem.

**"This is my third year growing lupins and there have been some lessons learned along the way. The biggest being not to leave them too late before combining as header losses at harvest can be significant. They need a flat seedbed as the plants can be quite short and pods can be close to the ground,"** Mr Harris says.

## CROP AGRONOMY

Agrii agronomist Tim Coltman is responsible for advising on the crop protection needs at Alkmonton Old Hall Farm. Aside from giving lupins a good start and not leaving them too late to combine, he says they are an easy crop to manage.

"Lupins aren't especially competitive, so a clean seedbed is always preferable. In most cases, this is easily achieved with a pre-emergence spray of clomazone and pendimethalin.

"From here on, it is straightforward. The crop receives a fungicide at stem extension along with a graminicide for any grassweeds that may have come through the residual at pre-emergence. Nutrition is equally easy. Zoom, a foliar complex of manganese, sulphur, magnesium, boron, molybdenum and some nitrogen along with humic acid is applied at 2 litres per Ha," Mr Coltman says.

The final crop protection task is to apply a pod-sealant in the weeks before harvest to minimise pod-shatter losses caused by heavy weather or at combining. "Once the majority of pods are at full size a pod-sealant is included with glyphosate at desiccation to minimise losses and ensure even maturity," Mr Coltman says.





# 16 Speciality Crops: Veg

## Active R&D: meeting the challenges of the future

Crop and product trials are an essential means of giving growers the information they need to produce productive and profitable crops, explains Don Pendergrast, Agrii head of non-combinable crop R&D.



**Don Pendergrast**  
Agrii head of non-combinable crop R&D

The farming industry faces challenges from all sides. They may come in the form of regulatory changes or market pressures, but the impact is often much the same: more pressure on growers to deliver crops that meet yield and quality expectations with fewer resources. For Agrii, field trials serve to provide the answers being asked by growers.

Our horticulture trials programme is extensive, often spanning several seasons. It is principally focussed on fruit, vines and field vegetables, but there is also work on ornamentals, bulbs and herbs. This work falls into various categories. From the new product evaluations that support manufacturer submissions for regulatory approval and product authorisation through to novel uses of existing or emerging technologies under testing conditions. There is also an element of 'horizon scanning' on our behalf. This is when we look at what active substances may be withdrawn and how might crop protection strategies change to fill the gap.

The recent decision by DEFRA to give a two-year reprieve to parallel products is welcome news, but it is a case of 'all that glitters is not gold'. These products will be subject to the re-application process, and importers will have to prove identity. This may be little more than an administrative exercise, but HSE CRD is already dealing with a backlog of applications. This may mean that some products remain unavailable come the spring. Consequently, some importers may decide that the business case for re-application is not worth pursuing.

A core focus for Agrii is to improve the nutrient use efficiency of crops. This work has largely focussed on meeting plant needs in a more targeted and precise manner, but we are also

investigating those means that better support the plant's ability to access and utilise nutrients.

We have observed worthwhile benefits from the addition of symbiotic nitrogen-fixing endophytes, thereby improving performance and reducing losses. Other trials involving Agrii-Start Release, a soil-applied phosphorus release agent, involving a range of vegetable crops have been so successful that we have expanded the programme to consider bulb onions and brassicas.

Apiaceae crops face specific challenges. It has fallen on the industry to pick up the work previously undertaken by AHDB Horticulture under the SCEPTRE project. To this end, we have several trials investigating a total of 13 biological and conventional products as well as cultural measures for protection against crown rot in carrots grown under straw.

In alliums, the greatest challenge is in managing the perennial threat of downy mildew. Growers inside the European Union have already lost mancozeb and face losing dimethomorph too. Growers in Great Britain still have access to these fungicides, but their future is by no means secure.

Thrips remain a constant threat in other alliums, notably leeks. The loss of effective insecticides means control relies on only a few active substances. New substances are on the horizon, and our experience with these is promising, but they remain subject to regulatory approval.

In brassicas, especially storage cabbage, botrytis is a serious threat. Our fruit team has been investigating zero-residue means of protection for some time. Botector, a biological fungicide containing *Aureobasidium pullans*, has been found to

extend the post-harvest shelf life of soft fruit. This winter, we will evaluate its performance against botrytis in storage cabbage.

For all the production challenges facing our industry, we can be grateful that the regulator in Great Britain has not followed the lead of the European Union. In the time since Brexit was finalised at the end of 2019, growers in Europe have lost mancozeb, isopyrazam and indoxacarb while etoxazole, famoxadone, flutriafol and prochloraz are under review. Some will be easier to replace than others, but control is likely to become more complex and expensive as a result.

It may be of scant consolation for those struggling with the pests and diseases that threaten crop performance, but for the time being at least, growers in GB can claim to have a competitive advantage over their EU counterparts. It's a position we should strive to maintain.

**Some widely used active substances have been lost and many more are under review in the European Union**

Active	Product situation in Europe since Brexit
Isopyrazam	Revoked
Mancozeb	Revoked
Indoxacarb	Revoked
Etoxazole	Revoked
Flutriafol	Revoked
Bacillus pumilus QST 2808	Expires in 2024
Bifenazate	No food uses (2022)
Spirotetramat	Expires in 2024
Benthiavalicarb	High risk
Clofentezine	High risk
Difenoconazole	High risk
Dimethomorph	High risk
Mepanipyrim	High risk
Metribuzin	High risk
Napropamide-M	High risk
Phenmedipham	High risk
S-Metolachlor	High risk
Triflurosulfuron-methyl	High risk

Reference: As assessed by Agrii, 2023.





## Veg trials show yield benefit of Agrii-Start Release



Trials with Agrii-Start Release in field vegetable crops show potential for reduced phosphorous applications, reports Don Pendergrast, Agrii technical manager for non-combinable crops.

The use of Agrii-Start Release, a soil-applied cation complexing agent used to improve the availability of phosphorous, has improved marketable yields by at least 10% in carrots, bulb onions and white cabbage.

In field trials over the past three years, Agrii has investigated the contribution to performance of a pre-emergence application of Agrii-Start Release. As a cation complexing agent, Agrii-Start Release breaks the bond between the metal ions in the soil and phosphorous molecules thereby improving the availability of the latter to the growing crop.

Many species of vegetable crops, especially alliums, are known to be highly responsive to phosphorous. As such, fertilisers high in phosphorous are often applied as starter fertilisers as an aid to establishment. However, many soils are already high in phosphorous, but crops are not always able to access it. This apparent contradiction between nutrient status and nutrient availability coupled with the prospect of tighter application restrictions intent on protecting water courses, prompted Agrii to investigate technologies that might lead to a reduction in the fertiliser needed to be applied by improving access to what is already present.

Results to date have remained positive. Soil analysis performed post-application revealed increases in the available quantity of phosphorous. This served as confirmation of its potential. Yield results support this hypothesis with increases in both gross yield and the percentage of crop meeting market specifications.

Carrots lifted from beds treated with Agrii Release were typically longer and heavier than those in the untreated. There were also fewer carrots outside market specification.

Agrii-Start Release increased marketable yield in bulb onions by 10%

Treatment	Marketable onions (>45mm)		Yield as % of control
Untreated	81.6	34.7	100
Agrii-Start Release (4 l/Ha)	83.6	38.3	110

Reference: Agrii, 2023. Agrii-Start Release applied pre-emergence.

Agrii-Start Release increased average head weight of white cabbage by 12%

Treatment	Average head weight (kg)	Yield as % of control
Untreated	0.78	100
Agrii-Start Release (4 l/Ha)	0.87	112

Reference: Agrii, 2023. Cv. Kalorama. Agrii-Start Release applied 1 day before planting.

Agrii-Start Release increased gross yields in carrot by 20% and marketable yield by 11%

Treatment	Gross yield (t/Ha)	Increase (%)	Marketable yield (%)	Increase (%)
Untreated	46.6	-	81.3	-
Agrii-Start Release (4 l/Ha)	56.08	+20	93.0	+11.7

Reference: Agrii, 2022. Cv. Nazareth. Agrii-Start Release applied 1 day before sowing.



## Test soils to identify spring fertiliser requirements

Ensuring crops receive sufficient nutrients this spring need not mean relying on the traditional blends, explains Thomas Perrott, Agrii crop input specialist.



**Thomas Perrott**  
Crop input specialist

After one of the wettest autumns on record and a similarly wet start to winter, crops are likely to face a nutrient shortfall come the spring. Crops on lighter soils or those low in organic matter are likely to need more attention but those on heavier soils are likely to face a nutrient shortfall too.

Addressing this situation is likely to require a more detailed focus on applications than might be expected in a typical year, but it need not all come in the form of traditional product derived from a bag. Bulk product is still the best means of supplying nutrient in large quantity, but there is now a far greater range of products and blends to choose from than was the case just five or so years ago. The 'Nutri-Match' service from Origin Fertilisers means growers can have a prescription fertiliser containing up to 13 nutrients that is tailored to their exact needs. Bespoke blends have done much to overcome the limitations of the conventional N:P:K:S products. Similarly, the development of protective coatings and liquid inhibitors has also extended the application flexibility to the benefit of growers while the introduction of polyhalite (sold as Polysulphate) has made it easier to meet winter wheat's seasonal requirement for potassium and sulphur. Polysulphate contains 48% SO<sub>3</sub> as sulphate, 14% K<sub>2</sub>O as from sulphate of potash, 6% MgO as from magnesium sulphate and 17% CaO as from calcium sulphate.

Accepting the reality that there will be changes in nutrient availability and that addressing any deficits is likely to involve greater expense, it makes sense to test soils in the early new year. Only a soil test will give a true representation of the nutrient status and with this knowledge, we can avoid the expense of over-applying or the loss of yield that would be incurred from under-applying. In a season such as this year when prolonged wet weather will have affected a soil's nutrient status, assessing the soil's true status is likely to be highly worthwhile, even if it is not due to be tested.

Soil moisture is the principal determinant of nutrient availability, but the soil's chemical properties also influence availability. Neither pH nor the soil's cation exchange capacity should be overlooked. Fortunately, pH is easily managed and while there is little that can be done to affect a soil's cation exchange capacity, well-maintained field drains will be vital to helping them recover their aerobic capacity.

Table 1: Example comparison of nutrient mobility in soils

Very mobile	Mobile	Slightly mobile	Immobile
Boron	Nitrogen (Nitrate) Sulphur Manganese Chlorine	Potassium Calcium Molybdenum Cobalt Nickel	Nitrogen (Ammonium) Phosphorus Magnesium Copper Iron Zinc

Source: Potash Development Association (PDA)

Table 2: Stow Longa Wheat Nutrition Trial 2020/21

Fertiliser Treatments*	N (kg/Ha)	Yield (t/Ha)	Protein (%)	NUE (%)	Gross Margin (£/Ha)
1: Standard N/poly-s	214	8.47	12.0	67	803
2: Reduced N/poly-s	164	8.29	12.4	83	840
3: Reduced N/back-loaded/poly-s	164	8.90	13.7	98	1030
4: Reduced N/no poly-s	164	7.98	10.9	70	643
5: Standard/back-loaded/NKS	214	8.65	13.7	78	901

\* Standard N: polysulphate (100 kg/Ha); liquid N (150 kg/Ha); foliar N (14 kg/Ha); liquid N (50 kg/Ha)  
 Reduced N: polysulphate (100 kg/Ha); liquid N (150 kg/Ha); foliar N (14 kg/Ha)  
 Reduced N/back-loaded: polysulphate (100 kg/Ha); liquid N (60 kg/Ha); foliar N (14 kg/Ha); liquid N (90 kg/Ha)  
 Reduced N/no polysulphate: Liquid N (150 kg/Ha) Foliar N (14 kg/Ha)  
 Standard N/back-loaded/NKS: NKS (343 kg/Ha); liquid N (60 kg/Ha); foliar N (14 kg/Ha); liquid N (80 kg/Ha)

Nutrients that are leached more readily (see Table 1) are usually those that are less strongly held in the soil on clay particles or organic matter. In general, anions (borate, sulphate or nitrate) leach more easily than cations (potassium, magnesium or calcium), although phosphate is an exception to this. Crop demand for phosphate peaks in the late spring to early summer weeks, but availability is affected by a combination of environmental factors and soil properties.

**Historically, growers seeking to ensure adequate phosphate availability after a wet winter would have applied up to 80 kg K<sub>2</sub>O but Agrii trials performed at Stow Longa in the 2020/21 season, indicate that through the use of Polysulphate it is possible to maintain yields with lower-rate applications.**

As Table 2 shows, application timing is crucial. Treatment 3 reflects a typical nitrogen programme for quality wheat with applications backloaded. Applying 60 kg/Ha at the first split and 90 kg/Ha on the final one boosted the yield to 8.9 t/Ha, the protein content to 13.7% and gross margin to £1,030/Ha.

The value of the Polysulphate to the programme can be seen in treatment 5 where it was replaced with a NKS blend. Despite providing much more potash than the equivalent backloaded N programme and 50 kg/Ha more N, the average yield was noticeably lower at 8.65 t/Ha, as was the NUE at 78% and margin at £901.

It is perhaps due to the additional magnesium and calcium in Polysulphate, the balance of the nutrients it contains, their sulphate form or a combination of all these factors that makes it a product that seems to deliver more than the sum of its parts. Given the environmental focus on ammonium nitrate this work is of great significance.

Other work has considered the value of a protected phosphate starter fertiliser applied to the seedbed at drilling. A yield response of 3.9 t/Ha over the untreated and 0.63 t/Ha over the ammonium nitrate demonstrated its value (see Figure 1). It also dispels the myth that starter fertilisers must be applied down the spout at drilling.



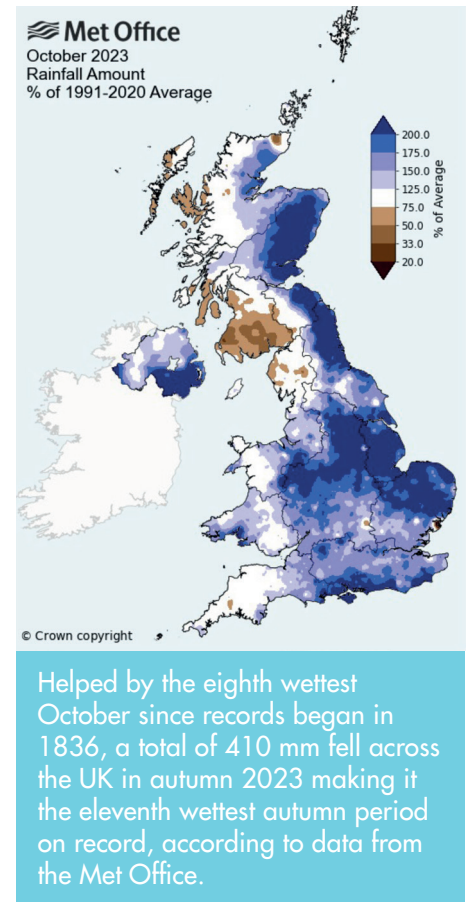
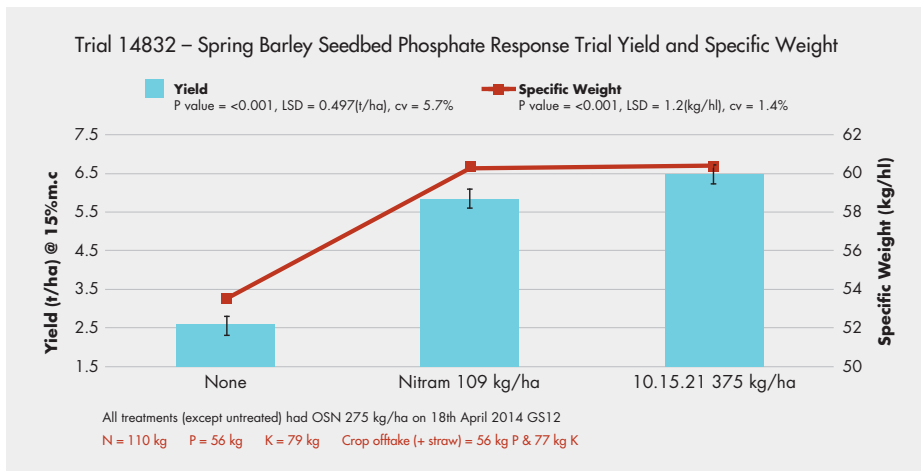
## Summary

Managing crop nutrient requirements this season will undoubtedly be a more considered task than might be expected in a typical year, but there are steps that, if adopted, could save growers time, hassle and unnecessary expense. An N-Min test for example, will determine what amount of nitrogen remains available to the growing crop helping to ensure that only what is needed is applied. As such, don't be afraid to have soils analysed even if it is not due. Similarly, the range of granular and liquid forms of macro and micronutrient products has made it easier than ever to ensure crops receive the nutrition required to realise their potential.

Field drainage too is equally easy to overlook. It often pays to walk fields during wet spells to identify areas where poor soil structure or blocked drains may need further attention.

None of this is rocket science, but it's a classic case of 'you can't manage, what you don't measure', so it is well worth spending some time assessing the reality of your soil nutrient status.

Figure 1: The value of a protected phosphate in a blend compared with ammonium nitrate alone



## NCS (Nitrogen Climate Smart) Project

Agrii is thrilled to be involved in a major new £5.9m farmer-led research programme involving 18 industry partners and over 200 farmers. The project, which is funded by the Farming Futures R&D fund, part of DEFRA's farming innovation programme, is geared towards investigating the potential of pulse crops in substantially reducing carbon emissions.

The consortium of UK companies, research institutes and farmer networks, led by PGRO, aims to bring about a reduction of 1.5 Mt CO<sub>2</sub>e per annum or 54% of the maximum potential for UK agriculture.

The ambitions of the project are to increase pulse and legume cropping in arable rotations to 20% across the UK (currently 5%).

In addition, 50% of imported soya meal used in livestock rations will be replaced with more climate-friendly home-grown pulses and legumes.

Both of these ambitious aims will be steered by science and proven by real farm enterprises, with significant benefits for both

crop and livestock productivity, including cost savings of over £1 bn/year.

Agrii will be involved in the project through a number of aspects, one being through close monitoring of trials in assessing the beneficial effects of legume crops on successive non-leguminous crops, such as cereals, across the rotation.

Our trials will utilise real-time soil sensors to determine nitrogen availability during crop rotations. We will closely monitor these through RHIZA remote sensing capabilities and via drone flight software Skippy Scout. We want to understand more about improved farm efficiency opportunities and optimised crop fertilisation approaches.



We will also focus on looking at the nitrogen output and growing regimes of novel crops such as chickpeas, lupins and haricot beans, which farmers may look to as alternative crops to grow for human consumption or as an additional protein source for their livestock rations. They also provide a nitrogen source to following crops, further reducing reliance on synthetic nitrogen.

To find out more about the project, please search for 'Nitrogen efficient plants for Climate Smart Arable Cropping Systems (NCS)' through your online search engine, or please do get in touch with Lucy Cottingham at [lucy.cottingham@agrii.co.uk](mailto:lucy.cottingham@agrii.co.uk).

# Liqui-Safe

More than a urease inhibitor



Manage your variable costs in Spring 24



React to the weather, save time and passes

**REDUCE NITROGEN LOSSES  
PROTECT YOUR INVESTMENT**



Scan to contact us and learn more about Liqui-Safe.  
Or email [info@agrii.co.uk](mailto:info@agrii.co.uk)

**Agrii**™



# 21 Training

## How Agrii trains the agronomists of the future

A decade ago, the agronomy industry was facing a staffing crisis. The average age of an agronomist was creeping ever higher; many were approaching retirement, and few young people were entering the industry.

This has been turned around thanks to the efforts of companies like Agrii, who have invested in attracting and training talented young men and women into the profession.



Agrii's training programme is called **iq** and is credited with training 60 new agronomists between 2016 and 2023. The programme is broken down into sections to teach trainees the technical knowledge they will need alongside core business and interpersonal skills to help them throughout their careers.

The agronomy programme is divided into 15 to 20 modules, depending on the individual's requirements. This supports a trainee gaining their professional qualification, with the BASIS certificate in crop protection and FACTS being essential, and many go on to study for a BASIS diploma, starting with Soil and Water. To date, 27 Agrii staff members have gained their BASIS diploma, with another six completing the Harper Adams equivalent diploma.

Everyone on the **iq** programme can meet key people in Agrii to learn the different areas of the business. The team at Agrii are continually reviewing and evolving the programme to ensure that it is fit for the future challenges agronomists will face. One of the changes they are considering is a formal mentor scheme to help support participants' training and nascent careers at Agrii.

"We have run the **iq** programme for several years; it aims to be a tailored and user-friendly training programme," says Mark Taylor, Agrii's head of agronomy. "**iq** stands for 'I quality', trainee agronomists and crop input specialists are a key focus, but the programme is open to any Agrii employee who wants to improve themselves in a specific area.

"We do not have a fixed number of people who do **iq**. Instead, we prefer to tailor the training to each intake of new staff. We work out a bespoke package of training for each individual. For some, this could mean more practical training; others will need it to be more academic."

The **iq** programme differs from other businesses by not being fixed, either with the number of new entrants or the make-up of the programme, explains Mark. The same rule applies when a new entrant develops their career in Agrii. The size and scope of being the leading farm advice, technology and supply business in the UK means that employees can choose their career path depending on their interests, abilities, and opportunities.



Agrii development agronomist Miles Doncaster completed the **iq** programme last year. Although his father is an agronomist, Miles wasn't sure he wanted to do agronomy. However, he took advantage of an opportunity to work for Agrii on a short-term basis in the summer while at university. This made him realise that a career in agronomy was something he wanted to pursue once he graduated.

"I have always been interested in the business and how it operates," says Miles. "I studied business studies and management at the University of Leeds, but much of what I learned is still relevant as a development agronomist. There is the relationship aspect of the role, and working for a company like Agrii gives you an insight into how a big business operates.

"I enjoy being someone a grower can rely on for information. If you are the agronomist, there is mutual respect. The agronomist respects a farmer's tremendous job, and they know that you can provide value to their business.

"Every day is so unique. I also love the freedom of planning my day; I choose when I

start and finish based on the work I must do. There are times throughout the season when I am on a beautiful farm, and it is a sunny evening when I cannot believe this is my job."

Miles began his BASIS course shortly after starting with Agrii, with the **iq** programme sessions running concurrently with the training. Initially, this helped him fill in some of the basics he needed to gain without having the background of an agriculture-related degree. As the programme progressed, it built his knowledge beyond what was required to pass the BASIS exam to equip him with the skills needed to be an agronomist.

"Without **iq**, I would have struggled to manage all the information I had to learn for BASIS. It also created a strong group of people at a similar stage in their careers at Agrii, which I could use for support. I have found that my Agrii colleagues will always find time to help me, whether by letting me shadow them as they walk their client's fields or by helping me build a picture of the farms in my area.

"Now I have completed the **iq** programme, I hope to build my client portfolio and become an expert in some specific areas of agronomy. To help me with this, I plan to study BASIS advanced potatoes and soil and water," adds Miles.

### Inspiring the next generation in agriculture

Crop Input Specialist Ian Roe and Trainee Agronomist Christina Dutton have teamed up to ignite agricultural interest among Year 2 and Year 4 students in the South West. From seed to shelf, they have delved into the journey of our food, discussed environmental stewardship, and explored diverse careers in agriculture.

#### Key takeaways:

- 1. Seed to Shelf:** interactive workshop revealing the journey from seed to the products we find in stores like Shreddies and porridge.
- 2. Milk Math:** using bottles to showcase the daily production of an average cow.
- 3. Potato Power:** led discussions on potatoes and engaged in a maths-based game to explore the growing cycle and end-use.

#### Why it matters:

Closing the knowledge gap between growers and consumers is vital. Research shows farm visits double the chance of considering an ag career, but only 29% of schools have this opportunity, so we decided to take the farm to the school.

For more information on Agrii's **iq** programme, please contact Sara Searle: [sara.searle@agrii.co.uk](mailto:sara.searle@agrii.co.uk), 01480 418033.



## How to kickstart slow growing crops this spring

With relentless winter rain in many parts of the country following an already challenging autumn for many, winter-sown crops are going to need a lot of care and attention in the next few weeks to get them performing to their full potential in 2024. Agrii's R&D fertiliser technical manager Jim Carswell takes a look at what insights the company's latest trials are providing to help growers kickstart backward crops this spring.



**Jim Carswell**  
R&D Fertiliser  
Technical Manager

**It's been a tough winter for autumn-sown crops. For a start, many were drilled into less than optimal soil conditions, much later in the season than is ideal for strong pre-winter establishment, with higher than average rainfall in many parts of the country since, only making an already difficult start to the growing season significantly worse.**

Many growers that managed to avoid flooded fields in January, still face the prospect of thin, backward crops with poorly developed root systems, sitting in saturated soils and vulnerable to pests and diseases.

Tiller numbers are likely to be lower than usual and where slug damage has occurred green area index (GAI) will be reduced. Such crops are far from being in the best condition to start utilising nutrients as the weather warms up but the other big question, of course, is what nutrients are there for them in the first place?

Most soils that have experienced the type of rainfall seen in recent weeks are likely to be starved of vital nutrition. Heavy rainfall increases the risk of key nutrients such as nitrogen and sulphur being lost from the soil whilst cold, waterlogged soils will be slow to release phosphate and to mineralise nitrogen for plants.

So, the challenge now is not only to rehabilitate plants and stimulate roots to make sure they are in the best condition to start vigorous growth and tiller development in the spring, but to also ensure they have the right nutrients available in the soil to allow them to do this.

As a science-based company with R&D at its heart, Agrii has invested significant resources over the years in looking at exactly what techniques, technology and management are likely to give a return on investment (ROI) in such circumstances. As in most situations, there is no one magic solution to hauling backward crops back into life as winter recedes, but instead our trials are highlighting a series of interlinked opportunities that together can work to build crop physiology and make vital crop nutrition work to its fullest efficiency.

### Five key areas that growers should consider are:

- 1. Understand your crops needs** – based on crop need and SMN supply
- 2. Optimise nitrogen availability** – to boost productivity and reduce environmental losses
- 3. Balance macronutrient supply** – to avoid any yield-limiting shortages
- 4. Get micronutrition working efficiently** – to increase ability of plants to use all nutrition
- 5. Boost crop physiology** – to improve root systems and tillering ability

### 1. Understand your crops needs

**If ever there was a year to carry out soil testing for nitrogen and other key nutrients to accurately assess crop needs, 2024 is it.**

Soil testing ahead of fertiliser applications is absolutely essential in helping establish

a baseline for application programmes, particularly after a winter such as in 2023/24.

A broad spectrum soil analysis can give you a highly detailed picture of the chemical, physical and biological status of your soil. As a start to nitrogen planning, an SMN test should be carried out in preference to a 'paper evaluation' allied to understanding what additional available nitrogen (AAN) will be accessible as the season develops.

Values for these vary significantly from season to season depending on conditions. Without knowing them for individual farming situations each year, it is unlikely the right decisions about applications rates can be made – which can have cost, productivity and environmental implications.

Ten years of trials at Agrii's Bishop Burton trials centre in North Yorkshire, for example, have shown SMNs ranging from 30 kg N/Ha to over 160 kg in the upper soil horizon and total soil nitrogen supply (SNS), which combines both SMN and AAN, being as low as 70.8 kg N/Ha and as high as 211.6 kg N/Ha.

January 2023 was amongst the lowest SMN levels we have seen following a very wet November and December period preceding, so with the very wet weather of recent weeks, 2024 levels could be even lower.

Clearly, this will have an impact on N required to optimise production and achieve the highest ROI. Ideally, soil testing needs to be considered in conjunction with grain analysis from the previous harvest to see what nutrients were removed by the crop. Tissue testing during the season is also very useful in helping make sure applications and uptakes are on track as the crop develops, so any shortfalls can be addressed in later applications.

Three years of Agrii iFarm trials on winter wheat at Cromarty, Scotland, have shown an average 1.4 t/Ha yield gain combined with a lift in nitrogen use efficiency (NUE) of nearly 10% giving an ROI of approx. £200 when nutrition programmes are informed by a full suite of soil and tissue testing.

### 2. Optimise nitrogen availability

**There's a strong case for an early start to nitrogen applications with rates depending on crop condition, SMN and rotational position.**

Once that initial application has been made, a 'little and often' approach matching nutrient

Applying liquid N to winter wheat



# 23 Crop Nutrition Insight

availability to crop need is preferable, with two or three follow up applications.

Timing of that first application is also important and it should really be made as soon as soils start to warm up and land can bare the weight of tractor and spreader/sprayer.

If you're starting your N applications earlier than normal, it also makes sense to look at bringing PGR applications forward, so the nitrogen can deliver its full benefits in building tiller numbers and roots, without producing unnecessary growth and increasing lodging risk. Ammonium nitrate (AN) has been proven to be a good choice for early applications, providing an immediate lift to plants, but if urea is being used the addition of a nitrification plus urease inhibitor has shown impressive results.

Agrii trials at West Lutton, Yorkshire, using 200 kg N/Ha as liquid UAN applied to winter wheat in two splits with Liqui-Safe, a combined nitrification and urease inhibitor, have shown a yield increase of almost 1 t/Ha compared to UAN by itself. As well as yields rising from 13.79 t/Ha to 14.58 t/Ha, NUE increased from 88.9% to 94.8% resulting in a return on investment of £171.60. As well as significant productivity gains, there are also considerable environmental benefits from the approach (see table 1).

## 3. Balance macronutrient supply

**Kickstarting crops into life after the difficult 23/24 winter will require more than just good nitrogen management, however.**

Phosphate, potash and sulphur all have a role to play in ensuring any nitrogen applied is used as effectively as possible as well as having important contributions to plant structure, resilience and overall health. Phosphate availability may be compromised by cold soil temperatures in early spring so an early application can increase rooting and energy production in the plant as well as aiding nutrient uptake. Applying phosphate in the spring to replace crop offtake and balance autumn applications has been shown to have a marked effect on yields.

In Agrii trials at Bishop Burton simply splitting phosphate applications between autumn and spring produced a yield response of 0.16 t/Ha. But it's also possible to make more use of the phosphate already in the system through phosphate enhancement in the spring.

Agrii iFarm winter wheat and winter oilseed trials between 2021 and 2023 on high P and K indexing, high pH sandy silt loam soils with the phosphate availability enhancer Agrii-Start Release, have shown considerable all-round improvements in crop yield without any loss of crop quality. In winter wheat, spring applications of Agrii-Start Release produced significant performance gains including yield gains of 0.57 t/Ha and an ROI of £87/Ha. Two seasons of trials in winter oilseed rape have shown yields and oil content to be maintained with lower nitrogen inputs from using Agrii-Start Release.

Sulphur is also an essential requirement in the spring to ensure NUE is optimised and plants remain healthy. As well as being essential in optimising yields, it's also a key component grain protein.

Spring applications of the multi-nutrient fertiliser polysulphate (48% SO<sub>3</sub>, 14% K<sub>2</sub>O, 6% MgO and 17% CaO) have also been shown to increase yields by 0.25 t/Ha whilst also improving specific weights and NUE to give an ROI of £27.50/Ha. (Table 2.)

## 4. Get micronutrition working efficiently

**While it is important to focus on nitrogen and other macronutrients as these are likely to have the biggest impact on crop health and production if in short supply, it's important not to overlook micronutrients.**

This is especially so when aiming to get all production elements working together to produce the best outcome after the winter. Often when soil indices look acceptable for these minor nutrients, tissue and grain tests can tell a different story.

Solid improvements in crop performance from providing extra micronutrients identified as likely to be lacking in previous grain and tissue testing, have again been seen in numerous Agrii trials. For example, two years of trials at Bishop Burton on high pH soil with good P and K indices using 14 winter wheat varieties and 23 winter OSR/seed treatment combinations have shown the importance of both calcium and copper.

Providing foliar calcium to winter wheat in the spring has been shown to not only improve yields, it can increase specific weights and lift

grain protein levels without applying any extra N. Lifts in NUE from 73.4% to 78.1% have also been seen.

Applying copper to winter oilseed rape in early spring, in addition to autumn, has also been shown to improve yields and NUE to give an ROI of over £54/Ha.

Many such additions can be incorporated into existing spray programmes to keep applications as cost-effective as possible.

## 5. Boost crop physiology

**Even if you have all your crop nutrition spot on and available for crops in the right form and quantity at the right time of year, the strength of the root system and overall root mass combined with the plants ability to tiller can have a major influence on how well these nutrients are utilised.**

Applied early in the season, for example, the plant boosting biostimulant Nutriphite PGA has been shown to increase wheat yields by 0.55 t/Ha without adding extra N resulting in significant increases in NUE and a corresponding lift in profitability.

Our trials have also shown that choosing fungicides with the ability to increase nitrate reductase activity as well as controlling disease have also increased yields, grain proteins and NUE at the same N supply.

## In conclusion...

**Most crops are generally less developed this year than previous seasons with rooting, plant growth and tillering ability likely to be compromised.**

Nutrient levels are also likely to be low in spring 2024 due to leaching, so paying attention to macro and micro nutrition inputs will be key to optimising outputs.

This year in particular, attention to detail, measuring and monitoring, using the most appropriate products and adopting a 'little and often approach' will pay dividends.

There is a wealth of data from Agrii trials and demonstrations to help growers have confidence in their decision making and achieve the best outputs and ROIs. Combining several techniques with positive ROIs will soon add up to a significant contribution to the bottom line.

SY Insector Response to Liqui-Safe Use with UAN – West Lutton 2021

Treatment	Total N Supply (kg/Ha)	Yield (t/Ha)	NUE (%)	Return on Investment (£/Ha)
Without Liqui-Safe	290	13.79	88.9	
With Liqui-Safe	290	14.58	94.8	+£171.60

Table 1

Winter Wheat (Champion) response to spring polysulphate – West Lutton 2023

Treatment	Total N Supply (kg/Ha)	Yield (t/Ha)	NUE (%)	Return on Investment (£/Ha)
Liquid N & S only	324	12.34	67.3	
Liquid N & S with polysulphate	324	12.59	68.7	+£27.50

Table 2

Waterlogging on headland





## Biologicals offer welcome activity against vine diseases

The difficulties in achieving satisfactory control of diseases such as *Botrytis cinerea*, powdery and downy mildew is placing increasing strain on crop protection programmes. In response, growers and their advisers are looking to other forms of protection – both cultural measures and fungicides approved in other crops – to protect yields and quality.

For Agrii, the need to find new solutions to a growing list of problems serves to underline the value of its trials programme.

“We look to evaluate new and existing products for use in speciality crops, including grapes, so our agronomists can provide the best and most informed advice based on direct experience,” says Don Pendergrast, Agrii technical manager for non-combinable crops.

With the end of the AHDB horticulture levy and the trials it supported, which collected the information needed to support applications for Extension of Authorisation for Minor Use (EAMU), it has fallen to Agrii and others to gather this evidence.

“We run trials each year on bush, cane and vine crops where we translate knowledge to growers so as to maintain the advice that supports their future,” says Mr Pendergrast.

This work is ongoing and evolves to reflect changes in disease pressure, the availability of crop protection products and the introduction of new technologies and production methods that might prove beneficial.

“For the past five years, our trials have investigated the potential of more than 40 different active substances in various combinations and programmes across a range of situations,” says Mr Pendergrast.

“These trials are targeted at existing gaps in plant protection and those we foresee over the horizon. They are integral to sustaining our growers for the long-term,” he adds.

A recent success has been with a new triazole approved for use in top fruit (see Figure 1), which shows a reduction in the incidence of powdery mildew on the foliar parts of 65% and 57% on the bunches. This is a significant improvement over that of proquinazid, a benchmark for control. It may, with the addition of further data, be used to support an application for EAMU in vines.

“The live bacteria in Botector, when applied in a preventative manner, outcompete the *Botrytis* fungus on the host plant. It effectively utilises the ‘founder effect’ to colonise the plant to create a shield that *Botrytis* can’t penetrate.” says Mr Pendergrast.

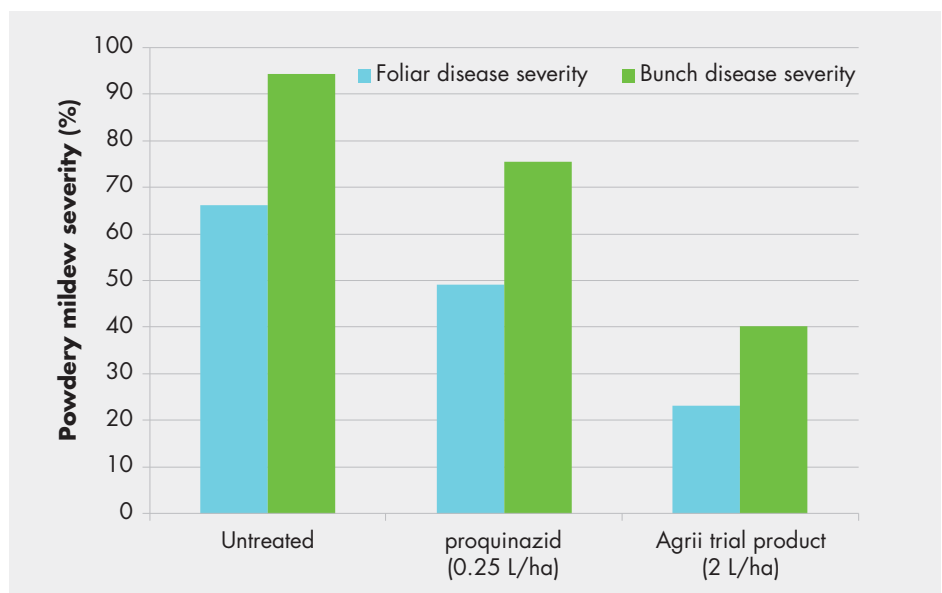


Figure 1: A new azole fungicide offers superior control to proquinazid. Reference: Agrii, 2023.

A previous success was with Botector, the biological fungicide containing *Aureobasidium pullans*. Its potential came to prominence with soft-fruit where treated crops were found to have a lower incidence of botrytis than those receiving the industry standard programme.

“The live bacteria in Botector, when applied in a preventative manner, outcompete the *Botrytis* fungus on the host plant. It effectively utilises the ‘founder effect’ to colonise the

plant to create a shield that *Botrytis* can’t penetrate,” says Mr Pendergrast.

“*Botrytis* is a particular concern due to the emergence of populations with reduced sensitivity to multiple fungicides. Applications of Botector have been found to support the efficacy of conventional fungicides to protect fruit while reducing overall fungicide use.

“We have observed similar efficacy in grapevines as part of a programme against *Botrytis*,” says Mr Pendergrast.





# 25 Speciality Crops: Fruit

## Agrii adviser is the first fruit adviser to gain a graduate diploma

Long-term fruit agronomist Gary Saunders has become the first non-arable adviser to gain the Harper Adams University graduate diploma in agronomy with environmental management.

A member of the Agrii fruit team since 2014, Gary has specialised in fruit since completing the BASIS diploma in crop protection after graduating from Wye College with a BSc (hons) in horticulture in 2000.

Serving fruit and vine growers across the south-east of England, Gary's career has spanned commercial production, research and agronomy.

Gaining the diploma, which builds on the certificate in crop protection (commercial horticulture) received in 2016 and the BASIS diploma in agronomy awarded in 2021, involved promoting a wider understanding of the farmed environment.

"Modern agronomy involves far more than just good crop protection, and I am increasingly called on to advise on problems for which the solution cannot be found in a bag or can," says Gary Saunders.



Gary Saunders is the first non-arable adviser to gain the Harper Adams graduate diploma in agronomy with environmental management

"The graduate diploma reflects the scope of the modern job with modules on soil and water management, conservation and waste to land, among others. As an adviser to some of the biggest names in the industry, I recognise that to best serve their needs, I need to constantly develop my skills and breadth of knowledge."

## National Fruit Show 23

Agrii's presence at the National Fruit Show was impactful, both as an exhibitor and as the visitor bag sponsor this year.

Agrii's fruit team offered expert advice on topics such as crop management and disease control which we hope our visitors found valuable.

Despite the footfall seeming significantly lower this year, it was great to catch up with our growers.



## Vineyard Show 23

Agrii significantly contributed to this year's Vineyard and Winery Show, notably as the tasting glass sponsor.

Agrii's stand showcased advanced solutions for vineyard management and wine production, across the whole of the vineyard process. Key highlights included soil health management, precision agriculture technologies via RHIZA, and disease and pest control methods – all essential for high-quality grape cultivation.



# 26 The Potato Partnership

## WHAT IS THE POTATO PARTNERSHIP?

**Through collaboration, we can achieve far more than if we worked alone.**

The Potato Partnership (TPP) was established with the understanding of its founding members that a collaborative effort was our best way of finding answers to our industry's production challenges.

The Potato Partnership is an opportunity for those with a vested interest in potatoes to work together for mutual benefit.

"Our first-year success owes much to the partners involved. We are heavily reliant on James Foskett Farms, and were it not for the willingness of the farm's directors to give access to sites and provide management time, The Potato Partnership would not have got off the ground.

Agrii has played a straight bat despite what some might say about the big distributors.

It has brought a depth of understanding and background knowledge to the project.

It too believes that collaborative enterprise is vital to sustaining the industry."



**James Wrinch**  
Director of East Suffolk Produce and TPP steering group member



Open Session, 15th July 21, James Foskett Farms



Winter Regional Meetings, Feb & March 23  
Photo: Throws Farm event, Essex  
Also held in Herefordshire, Yorkshire and online.



East Field Event, 2nd August 23  
Sutton Hall Estate, Woodbridge.

"TPP has enjoyed a great start and the work we do is of real benefit to growers. It has benefited from having a clear purpose, members who understand the value of collaborative working and crop protection manufacturers willing to see their products independently tested."



**Nick Winmill**  
Head of Potato R&D at Agrii

## British Potato 2023

At the British Potato Show, Agrii showcased innovative solutions for potato farming.

The stand focused on sustainable agriculture, featuring advanced crop protection, soil health analysis, and precision agriculture techniques.

Agrii's stand experts offered insights into crop management and disease control, underlining Agrii's role as a key resource in potato cultivation.

There was a heavy focus on the stand about The Potato Partnership (TPP) and it was great to catch up with growers, steering group members and TPP's trial supporters on the stand!





# 27 The Potato Partnership

## TPP REGIONAL RESULTS MEETINGS 2024



The Potato Partnership (TPP) – a collaborative project which aims to investigate solutions to some of the most pressing production challenges potato growers are facing.

### AGENDA

Members of the steering group will present trial results from 2023 experiments including:

- + 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.
- + Making more of phosphate soil reserves.

With thanks to all of our trial sponsors.

## THE POTATO PARTNERSHIP

Become a website member for exclusive benefits

Features and benefits:

- + Market insights
- + Book onto upcoming events
- + Steering group and trial supporters information
- + Trial updates and summaries

[www.thepotatopartnership.co.uk](http://www.thepotatopartnership.co.uk)

Scan the QR code to visit the website



### LOCATIONS & DATES

#### ESSEX

Agrii, Throws Farm,  
Stebbing, CM6 3AQ  
Monday 12th February

#### HEREFORDSHIRE

Hereford Racecourse  
Roman Road, Hereford, HR4 9QU  
Tuesday 13th February

#### SCOTLAND

Leonardo Boutique Hotel Huntingtower,  
35 Pullan Place, PH1 3JT Perth  
Tuesday 27th February

#### YORK

Sandburn Hall, Scotchman Lane,  
Flaxton, York, YO60 7RG  
Wednesday 28th February

### TIMES

	ESSEX, SCOTLAND AND YORK	HEREFORD
Arrival	9:30	12:30
Start	10:00	13:00
Finish	12:30	15:30

Lunch provided for all.

## HOW TO RSVP

To book onto your chosen event, visit:  
[www.thepotatopartnership.co.uk/events](http://www.thepotatopartnership.co.uk/events)

Please note: you will need to become a website member if you haven't already in order to book onto the events.

Please be advised these events have limited space available and will be on a first come first served basis. You must book your place prior to attending.

Any issues with registering to an event, please email [becca.cook@agrii.co.uk](mailto:becca.cook@agrii.co.uk)



# 28 iFarm Results Report



## Harvest 2023: iFarm Results Report

The 22/23 season was undoubtedly a disease-pressured year, with variety choice being an important component of disease risk management. Enclosed in the 2023 report, you will find variety results on our spring and winter cereal and winter oilseed rape trials as well as a special feature on drones in action and variable rate nitrogen with RHIZA.

Our iFarm report covers 16 iFarm sites and 6 Technology Centres. It is categorised by region to ensure you can easily locate the trials reports most relevant to your farm and localised weather pressures, as well as a national overview. We hope you will find the information useful to inform future decisions on variety choice for disease, pest and lodging management.

Read the results report and claim CPD points by answering four questions. Details on how to participate are enclosed in the report.



- iFarms are a network of sites across the UK, kindly hosted by Agrii clients, where local farmers and growers can view demonstrations of new agronomic innovations and discuss how they can be put into practice on farm.
- Technology Centres are larger, regional versions of our iFarm sites.

**2024 National Events** We hope to see you in the new year! Look out for us at:

 **Cereals** – 11th & 12th June

 **Groundswell** – 26th & 27th June

## Connect with Agrii



**Agronomy and advisory teams**  
– we have over 300 agronomists throughout the UK



**iFarm Events**  
– 28 iFarm and Technology Centre demonstration farms throughout the UK



**Online at [agrii.co.uk](http://agrii.co.uk)**  
for the latest news, event information or to ask us a question



**Social media**  
 AgriiUK  AgriiUK  
 AgriiUK  Agrii\_UK  
 AgriiUK



**Customer Services Team**  
on 0845 607 3322  
or email [info@agrii.co.uk](mailto:info@agrii.co.uk)

**Your privacy:** As an existing or potential contact of Agrii, the information contained in this document is designed to be relevant to your business and of interest to you. You have the option to opt-out or unsubscribe at any time. Please just get in touch with us using the contact details on this page to let us know.

     [www.agrii.co.uk](http://www.agrii.co.uk)

Printed using vegetable inks on paper made from FSC® certified and traceable pulp sources. Manufactured in accordance with ISO certified standards for environmental, quality and energy management. A Carbon Balanced product with World Land Trust certificates.