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Agri intelligence

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A SKY-HIGH REVOLUTION IN CROP RESEARCH

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A SKY-HIGH REVOLUTION IN CROP RESEARCH

Drone technology is poised to bring about a significant transformation in crop research in the coming years, according to leading agronomy company Agrii. This technology has the potential to not only enhance the capacity of plot assessments traditionally conducted by researchers but also to improve the consistency of results across all Agrii trial sites throughout the UK.

Dr Ruth Mann, head of research and development for Agrii, has been looking for disruptive innovation in field research trials for some time. "Assessments are completed in exactly the same way as they were when I was first involved in small plot trials work over 30 years ago. New technologies are providing opportunities to move this approach forward considerably," says Dr Mann.

Trials depend on researchers to collect in-season data on a range of factors like plant counts and NDVI. Given that most research sites extend to several thousand plots, this process is not only time-consuming and labour-intensive but also prone to subjectivity, leading to potential discrepancies in results among researchers. Agrii has been actively working with specialists at Drone Ag and heliguyTM to explore the potential of drone technology in their R&D programme. Leading this research is Jonathan Trotter, the technology trials manager at Agrii.

"Agrii operates 40,000 trial plots at sites across the UK," says Jonathan. "Each of those plots requires different assessments at different times of the year according to the requirements of the trial. This is a huge logistical effort."

Dr Mann adds: "These assessments are subjective as they are completed by researchers with their innate biases. If we can complete these assessments objectively using software, we can remove any variability among researchers, resulting in data which are comparable across the country. This provides further enhanced technical backup for all products marketed by Agrii."

New drone tech moving things forward

An alternative method uses Drone Ag's Skippy Scout platform. Currently, this is used to aid agronomy and decision-making in commercial fields rather than R&D. Scout points are identified across a field, and data are collected from them, which helps build a more complete picture for agronomists and farmers. Agrii is collaborating with Drone Ag to use this technology and their A.I. in trial plots.

"Our custom flight control technology allows a drone to take detailed low-level images of each plot," describes Jack Wrangham, director of DroneAg. "It will speed up the process of assessing trials because there will be no need to stitch together many images like with the photogrammetry method."

The Skippy Scout system will allow the researcher to assess multiple fixed points per plot. The drone will return to the same point for subsequent assessments. The Skippy Scout method should also allow a greater range of assessments to be conducted by drones.

"Having the drone closer to the plot gives much more detail to the imagery. Photogrammetry is very good for detecting differences between plots, but it still requires ground-truthing by a person to analyse what the difference is attributed to. The Skippy Scout system does 95% of this.

"It should reduce much of the labour required to run trials and can help target where a researcher needs to check a trial by flagging specific plots that would benefit from checking," adds Jack.

Fully automated flight on the horizon

The game-changing development for using drones in R & D will be if they become fully automated. This would enable drones to conduct many more assessments than has ever been possible, all carried out on a fixed schedule without needing a human to be present at the trial site.

"In a fungicide trial, we currently do disease assessments perhaps three times in the critical spring period," says Jonathan. "If you really wanted to, you could fly every hour of every day to detect things we are currently missing."

The technology is capable of unmanned and beyond visual line of sight (BVLOS) operations, but current UK regulation restricts its use. Agrii is working with heliguyTM, a leading drone retailer, consultancy and training provider, to help build the case for BVLOS use.

"At the minute, the regulation is pretty limited in the UK," says James Willoughby from leading drone retailer and training provider Heliguy. "Recently, the Civil Aviation Authority (CAA) has announced a 'regulatory sandbox'. They have appealed for stakeholders to come forward to participate in a trial test of their proposed regulation to allow BVLOS.

"Companies will have to build up a use case with evidence of safe automated drone use to get authorisation from the CAA, which Agrii has been doing with their existing work."

"Bringing together the skill sets in these three companies will lead to long-awaited innovation in field trials. Enhancing data collection methods beyond traditional photogrammetry techniques by using the advanced analytics of Skippy Scout and combining this with full autonomy will increase the value of the trials Agrii complete across the UK and reduce the monotonous field assessments that need to be completed by highly qualified researchers," concludes Dr Mann.

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Live demonstrations at DroneAg's office in Northumberland

Proof of concept

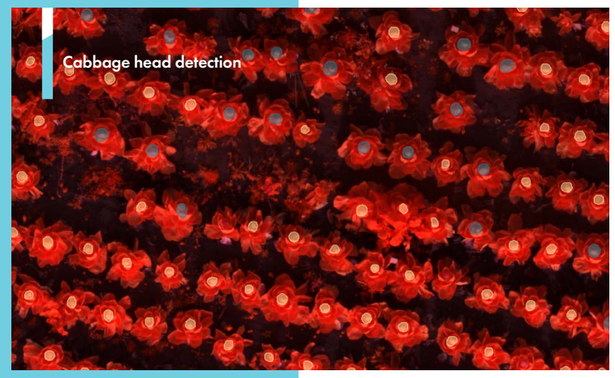
The intention of Agrii's development trials in 2023 was to count cabbage plants to eliminate the need for manual counting. "In this example, the trial plot was 0.16 ha, and of the 5460 cabbages planted, 5241 were counted on 17th October, meaning a 4% loss," says Jonathan.

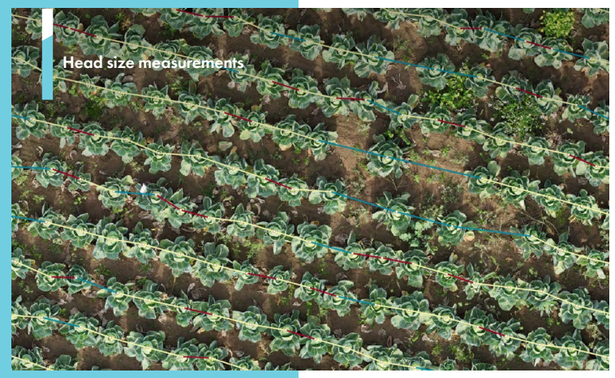
"Of greater value is the cabbage-by-cabbage analysis of head size to understand what proportion of the crop met the market specification and if any portion of the plot needed to be left to grow on. The potential of such a system to inform harvest scheduling and yield forecasting is immense."

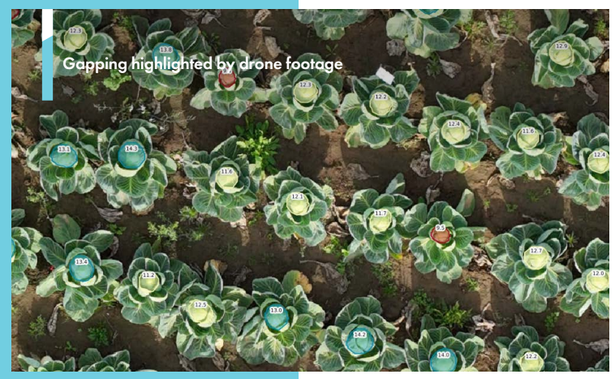
Ground-truthing the crop revealed a margin of error of about 0.5 cm per cabbage, roughly about the same size as the picture resolution. Where greater accuracy is required, the drone can be flown closer to the crop, though this has the downside of reducing working rates. Conversely, where less accuracy is required, the drone can be flown higher above the crop to increase working rates.

"For trials, the data captured are extremely useful. We can compare different sites, treatments or whole regimes with considerable ease but also in immense detail. It can also be used to investigate possible reasons for underperformance, such as gapping between plants," add Jonathan.

Having successfully proved the concept, the team is now using it in a sugar beet herbicide trial to count weeds and plants (for assessment purposes) while it is also being trialled on commercial farms as an agronomy tool.


Cabbage head detection


Head size measurements


Gapping highlighted by drone footage

In Agrii's cabbage trial, the software was trained to count cabbage plants (top), to measure head size (centre) and to measure the gaps between plants (bottom).

Key points

- Drones offer an exciting opportunity to increase the accuracy and volume of trial assessments
- Flight automation could make drones a 'game-changer' for R&D
- Proof of concept work has demonstrated its potential, and Agrii is actively rolling out drone technology in its research

GOOD YIELD AND SOUND AGRONOMICS MAKE FITZROY A SOLID PERFORMER

Across 2,500 acres of owned and contract-farmed land, A & R Fraser seeks to achieve a balance of crops that ensure a balanced workload and a respectable return for its clients. Delivering this involves all members of the family from brothers George and Jonny and parents Andrew and Rosalind.

The rotation is based around combinable crops with a focus on milling wheat. "The wheat area is predominantly milling types based on the belief these were likely to attract a strong market premium for the 2024-25 marketing year and would therefore be more profitable than feed," says George Fraser.

In past years, feed wheats have made up a large part of the crop area and, with futures prices less attractive, are likely to do so again this autumn.

"Skyfall and Crusoe are the preferred milling varieties while Graham and Fitzroy have performed well as feeds. In 2023, Fitzroy accounted for roughly 300 acres. It out-yielded Graham by about 0.5t/ha and was on par with the milling wheats at 9.75t/ha. In 2022, it yielded 12t/ha but this was exceptional year, but now we know it can perform, we will be sowing it again this autumn," says George.

In recent years, the business has made several changes to its crop production regime in a bid to support profitability. In 2016 the farm moved to liquid fertiliser to save on labour and machinery costs in the handling of bagged product while in more recent years, crop establishment has been based on a no-till approach to save on fuel and metal costs.

"Some varieties suit this system better than others, so it can pay to research variety options before making selections. This is how we arrived at Fitzroy despite it not being on the Recommended List. It looked good in trial, so we gave it a go," he says.

A key consideration for A & R Fraser when making variety choices is the light soils that cover most of its farmed area at Charlton, near Shaftsbury, Wiltshire.

"Some of our ground could be considered of low quality and prone to drought. It was noticeable that the Fitzroy seemed to tolerate this better than the Graham as was visibly greener for longer.

"This could be due to its better disease resistance which may also explain its later maturity. It tends to ripen shortly after the Crusoe which suits our harvest priorities," says George.

Management benefits are one of the main attractions of Fitzroy. Unlike the milling wheats it doesn't receive a T3 spray while the T0 is trace elements and a plant growth regulator only.

DRILLING CHOICES NEW VARIETIES FOR AUTUMN 2024
Winter Wheat
SY Cheer – Group 1 milling
BAMFORD – Soft feed and distilling
BLACKSTONE – Soft feed
LG BEOWULF – Hard feed
OXFORD – Hard feed
RGT GROUSE – Hard feed with BYDV resistance
Winter barley
LG CARAVELLE – 2-row feed
BOLIVIA – 2-row feed
Winter Oilseed Rape
VEGAS – Hybrid
RGT KANZASS – Hybrid

The T1 is a standard mixture of prothioconazole and SDHI while the T2 is a triazole, SDHI and strobilurin mixture.

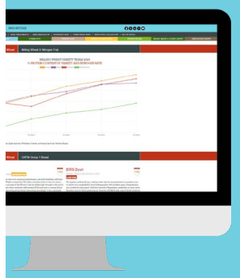
"It also has a vigorous growth habit. We have found this beneficial in minimising damage by slugs and in competing with grassweeds. The latest safe sowing date of end of January is also appreciated when autumn conditions are less than favourable," he says.

An often-overlooked consideration when selecting varieties is the risk that a variety will suddenly breakdown to disease as happened when the 'Warrior' race of yellow rust swept across Europe in the early part of the last decade.

"Varieties occasionally suffer a rapid fall, so having a little diversity in the genetic base can be valuable. Risk management in all its forms is something as an industry we could do better. Fitzroy provides an opportunity to spread the growing risk through a mix of parentage that doesn't exist in our other varieties," says George.

At 92cm tall Fitzroy also fulfils another requirement: the need for straw.

"We have several muck-for-straw arrangements with local farmers and also sell straw off the farm, so its height is appreciated. It also looks good in the field. Not quite as good as the Crusoe, but better than many other varieties," he adds.



The latest Agrii-Seed Autumn Crops Yearbook is now available

It's packed full of information that we hope you find useful. The Yearbook is now available online via Agrii's Seed Microsite, which can be accessed anywhere and is intuitive to your needs.

If you have any questions, please don't hesitate to get in touch.

PRIORITISE CONDITIONS OVER CULTIVATIONS WHEN MAKING VARIETY CHOICES, NEW AGRII TRIALS SUGGEST

Latest Agrii trials suggest while clear differences can be seen between varieties in various production scenarios, there is little to separate them when it comes to their performance in direct drilling or conventional cultivation systems.

Varieties and how they perform across a range of production scenarios is a key element of Agrii's integrated crop management (ICM) programme, says the company's head of integrated crop technologies Dr Ruth Mann.

"All trials work at Agrii is designed to provide growers with vital information on how to manage the ever-changing range of crop production systems, with varieties right at the heart of this," she points out.

"The aim of all our R&D output is to deliver on every farmer's triple bottom line and ensure yields and profitability are optimised without detriment to the environment.

"Identifying the optimal variety for sustainable cereal production is an essential part of any ICM programme, but it has not always been clear whether varieties perform the same in all situations.

"In particular, one of the big questions of recent years has been around varietal performance in direct drilling versus conventional ploughing systems, and our current work is providing vital insight into this."

According to Agrii seed technical manager John Miles, the latest indications are that growers should choose varieties that are likely to deliver the best performance in their individual locality and growing conditions rather than trying to identify which ones suit their cultivation system best.

"Two years of trials across two different locations with both direct drill and conventional cultivation systems have shown no statistical proof that some varieties suit one approach better than the other," he explains.

"The theory was that because there is potentially low mineralisation in direct drill soils as they are not being disturbed, a nitrogen poor scenario creating slow growing crops could result, with some varieties coping better with this than others.

"Equally, some direct drillers may choose to sow a bit earlier as they are not being held up by cultivations, so that too could affect what type of variety would do best. Many producers looking to switch to direct drilling from ploughing, therefore, ask the question which varieties are likely to deliver the best performance in the new system and there has been a lot of debate about this over the years."

The Agrii trials took place at sites in Huntingdon and Braintree, with both locations deliberately featuring hanslope series clay soils representative of 35% of the UK's arable area, John Miles explains.

"Heavy clays tend to be more of a challenge when moving on to direct drilling, but they are representative of many of the soils found in the East of the country. For both sites and years the same range of 18 popular RL wheat varieties was used.

"The Huntingdon location was on a farm where direct drilling has been practiced for the last ten years alongside integrating cover crops, whilst at Braintree continuous wheat has been the approach for 40 years, but direct drilling is now being looked at to save costs.

"Because of the expected higher losses at establishment from direct drilling, it was decided to up the seed rate from the 350 seeds/m2 of the conventional approach to 425 seeds/m2 for the direct drilled plots, to ensure even plants stands.

In both years across both sites, plant and ear counts were roughly the same for direct drilled and ploughed plots, showing the extra 75 seeds/m2 had helped create the level playing field across all plots that we had hoped for.

Direct drilling challenges

Results from the Braintree site for 2022 showed average yield of the plots that were direct drilled was 8.9t/ha compared to 9.5t/ha for the ploughed ones - a 0.6t/ha difference.

"KWS Zyatt, KWS Extase, LG Skyscraper, KWS Dawsum, Gleam, and DSV Theodore all did well in the direct drill situation with yields of 9.0t/ha and above, but these are the same varieties that did well in the ploughed situation, too, with some topping 10.0t/ha."

Highlighting some of the issues with direct drilling, the overwhelming reason the ploughed situation yielded higher was because the actual area of crop harvested was less in the direct drill plots, John Miles explains.

"Although all the straw was removed from the trial field, there was regrowth out of the back of the combine, and all it took was drilling on a wet, foggy morning to result in poor establishment. This was not helped by the significant slug pressure created by the level of residue even in a wheat-only rotation.

"You can see similar areas in the farm's other fields, with crop density getting noticeably thinner in those areas, but a trial drill goes slower than a normal drill and doesn't have the same weight to it, so the problem is more evident.

"That said, it is indicative of what can happen when you are drilling into residue. It's often the case that you end up with a sub optimal plan stand which in this case was seen as a bare stripes across all the replicates. The yield difference between the different approaches was, therefore, largely because the direct drilled area had some bare patches in it rather than actual differences in the crop.

In 2023, establishment was even in both crops and the final yield results closer too, he explains.

"Conditions were too challenging to plough, so the cultivated plots were heavily disced a couple of times instead, but throughout the growing season, it was difficult to see a difference between the plots.

"In the end, average yield difference was only 0.4t/ha between the different approaches, but again those varieties that did well with direct drilling, also performed well in the cultivated scenario.

"There was marked difference in performance between the different varieties at the site, but nothing that would suggest a better result for one variety over another between the two approaches."

Ploughing problems

At Huntingdon, in 2022 all plots established relatively evenly, but the ploughed ones started losing biomass because of the high rainfall in January that year, John Miles explains."

In contrast, it was probably the kindest start possible for the direct drilled plots as it was after oilseed rape, without much trash and a cover crop that was sown with a drill featuring large tines that helped break up the surface. "Unsurprisingly, direct drilling outyielded ploughing in this case to the tune of 0.6t/ha, but in view of what we saw in February with the biomass, that is probably not too much of a surprise.

"Similar conditions were seen in 2023, where once the ploughed areas got wet in the winter, they stayed that way, with a correspondingly lower biomass in February. But we didn't get the subsequent prolonged drought seen the previous year, so the ploughed plots did recover somewhat.

"But the direct drilled plots still yielded on average 0.7t/ha more than their ploughed counterparts. Again, the varieties that performed well in the RL that year – KWS Extase, KWS Dawsum, Gleam and Graham - were the ones that delivered the highest yields across both approaches."

Basically, at one site the plough won the day and at the other site direct drilling worked better and this was consistent across both years, he points out. "Subsequent analysis shows that while differences between varietal performance at each site are significant, there is no correlation between any variety and its ability to do better or worse in direct drilled or plough-based production systems."

"While there is some truth that in some circumstances, such as when drilling into cover crops, incorporated straw or in challenging weather, a more vigorous variety could help with establishment, our results suggest this is much more to do with conditions than cultivations.

"A high vigour variety could well compensate later for poor early establishment, grow through slug attack better in adverse conditions or simply thrive better in cold, wet soils, but this would be the case regardless of farming system."

No difference

By and large, a variety that does well in a ploughed situation will do well in a direct-drilled scenario, John Miles concludes.

"Even if we had been able to identify a difference in performance in varieties between ploughed or direct drilled systems, it is likely it would be so small as to make it barely worth considering. It would certainly lie outside the top five considerations.

"In other words, all the current reasons why you choose a variety for your particular situation - yield potential, disease resistance, standing power etc. - would outweigh any suitability to cultivation system.

"Ultimately, the ability of a variety to perform in any farming situation is down to conditions encountered at establishment and throughout the growing year and not its suitability to any one production system over another."

Key points

- Agrii research shows that varieties perform similarly in different establishment systems
- Variety performance is due to the characteristics of the variety in those conditions across a growing year. The best RL varieties tend to stand out across different regions and seasons
- Increasing the sowing rate by 75 seeds/m2 in the direct-drilled situation accounted for higher establishment losses, leaving similar plant numbers to the plough-based establishment system

FARM-SAVED SEED
THE 'SAFETY-VALVE' FOR FARMERS

Agrii™

Farm-saved seed will be an invaluable service for many existing and new growers come this autumn. There is huge pressure on the national certified seed-crop after the most challenging autumn and spring conditions in recent history. The seed area is significantly down and yields expectations are much lower than normal year. This is compounded by the fact that farmers are in a similar situation with their own crops and demand for certified seed is likely to be high especially for the newer and upcoming varieties. We saw this exact scenario with spring barley earlier this year.

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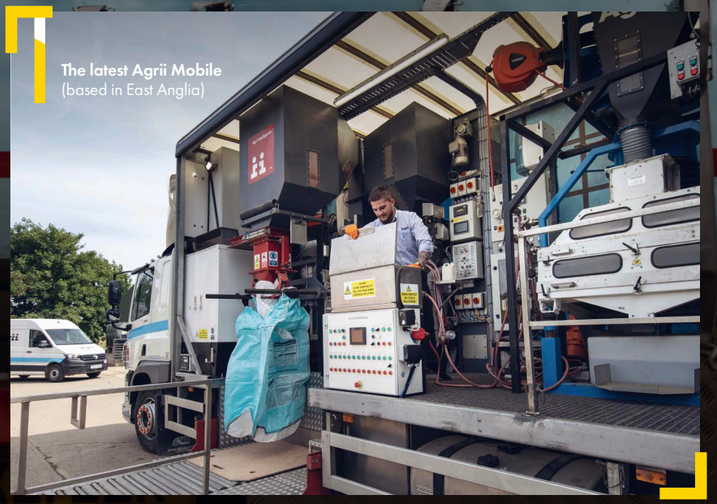

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WHY FARM-SAVED SEED COULD BE YOUR BEST OPTION!

Select your best field for farm saved seed - and earmark it!

- Discuss early with your agronomist or local FSS contact

Don't disregard weedy seed crops!

- Our FSS cleaning machinery can separate out most weed species including back-grass. The only problem weeds are those with similar seed size e.g. cleavers, brome, wild oats

Importance of seed health

- Seedling blight is the main consideration for wheat seed. Use prothioconazole-based sprays at T3
- Bunt (wheat) and loose smut (barley) should not be a major issue provided that seed crop was treated with a base-fungicide
- The use of a fungicide seed treatment will provide good control of all of these diseases

Ergot?

- Ergot is a key consideration and this can lead to crop rejection
- Evident within the growing crop before and after harvest
- Heavily infected crops should be discarded but lighter infection can be partially cleaned-out by your mobile
- Aim for no more than 2 ergot pieces per kilogram which is the minimum C2 certified-seed standard

Get a bolder seed sample

- Farm saved seed has the advantage of improving the boldness of the grain sample via cleaning
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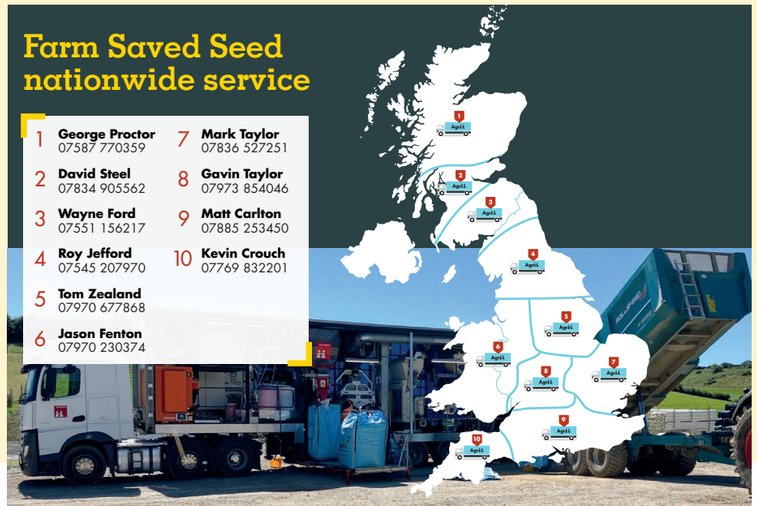
4	**Roy Jefford** 07545 207970	10	**Kevin Crouch** 07769 832201
5	**Tom Zealand** 07970 677868		
6	**Jason Fenton** 07970 230374		



A likely busy season ahead... get in touch early!

Please get in touch with your Agrii agronomist, Crop Input Specialist or your local Fam-saved Seed coordinator or for more information. Alternatively, contact Mark Taylor, National Farm Saved Seed Business Manager on **07836 527251** or e-mail **mark.s.taylor@agrii.co.uk**

AGRII AND WEAVING TO JOIN FORCES AT GROUNDSWELL

Agrii and Weaving machinery will come together on a shared and interactive stand. The collaboration follows a ten-year relationship between Weaving's sales director, Simon Weaving, and award-winning Agrii agronomist Todd Jex.

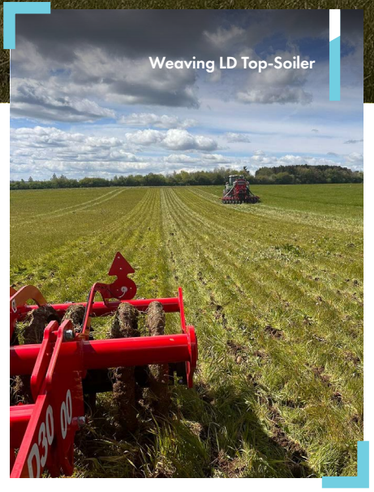
Three different cover crop mixtures will be used across the demo plot, and pop-up marquees will host targeted discussions, all interspersed with complementary low-disturbance farm machinery.

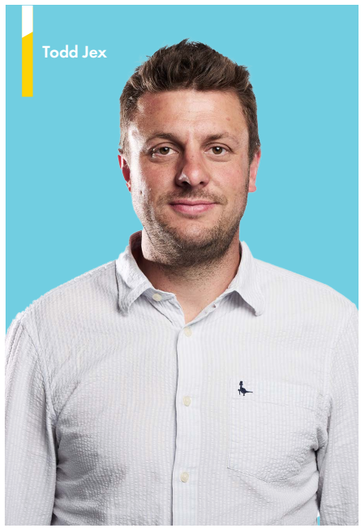
Using the specialist agronomy knowledge of the Agrii team, three cover crop mixes have been carefully selected for the demo plot to provide opportunities to discuss the merits of their different species and demonstrate what works well from a practical, agronomic, and financial point of view.

In keeping with the event's no-till principles, Weaving will present its range of direct drills and a selection of low-disturbance cultivators, thoughtfully paired with Agrii's discussion topics, such as the tine versus disc crop establishment debate.

One of the interactive stations will feature a soil pit, initiating conversations about the influence of various machinery and agronomic decisions on soil structure.

To find out more information about the Groundswell stand, including event dates and where to find us, please see page 27.





AGRII STRENGTHENS FRUIT TEAM WITH FIVE NEW RECRUITS

Crop advisers Agrii has added five new specialist fruit advisers over the past year in response to customer demand for more bespoke agronomy and environmental advice.

Commenting on the appointments, Agrii head of fruit Kevin Workman explained that the expansion of the fruit team was due to increased demand for agronomy services, but also reflected the evolving nature of the advisory role that extends beyond just crop protection.

"The new team are principally agronomists with backgrounds in soft, top and stone fruit, ornamentals and hydroponics, but their experience goes far beyond crop protection strategies. Careers on commercial farms and nurseries, with marketing groups or in specialist nutrition means they will enhance the capabilities of the wider horticulture team within Agrii," says Mr Workman.

Robert Graham, 53, joined in January 2023 after spending more than 20 years managing a diverse soft and cane fruit production operation in mid-Kent.

"I was approached by a former colleague now also at Agrii and was impressed with the breadth of the employee training on offer, but also the company culture. This piqued my interest, but it was the vision for what an advisory role could be that excited me. The focus on sustainability and recognition of the need to find and develop new production methods reflected my desire to help growers meet tight market specifications while also being profitable," says Mr Graham.

Also joining in 2023 was Emma Smith, 32. Based in Leominster, West Midlands, Miss Smith held a fruit production role with growing and management responsibilities. Her background in all classes of fruit, including hydroponic systems, brings valuable commercial acumen to the team as does her experience in various business administration roles outside horticulture.

"The move into agronomy followed an undergraduate degree in horticulture and several years in commercial production. It was the broad scope of the role that appealed to me, and it has been extremely rewarding since," says Miss Smith.

Having completed the BASIS certificate in crop protection since joining Agrii, Miss Smith has also received a bursary from the LSA Charitable Trust to develop her knowledge and understanding of the horticulture sector, an opportunity which was fully supported by Agrii. Now working with clients in Herefordshire and the wider region, Miss Smith is seeking to add FACTS to her list of accomplishments.

Jonathan Garratt, 36, joined in December 2023 and is based near Cambridge. He has a background in ornamental crops stemming from his time as a technical manager growing hardy nursery stock. He also has a wealth of experience in trials and research having spent seven years with a major ag-chem manufacturer focusing on areas such as herbicide resistance and the development of novel technologies, including precision application systems. Jonathan joined after spending two years with a horticultural crop nutrition manufacturer in a technical advisory role.

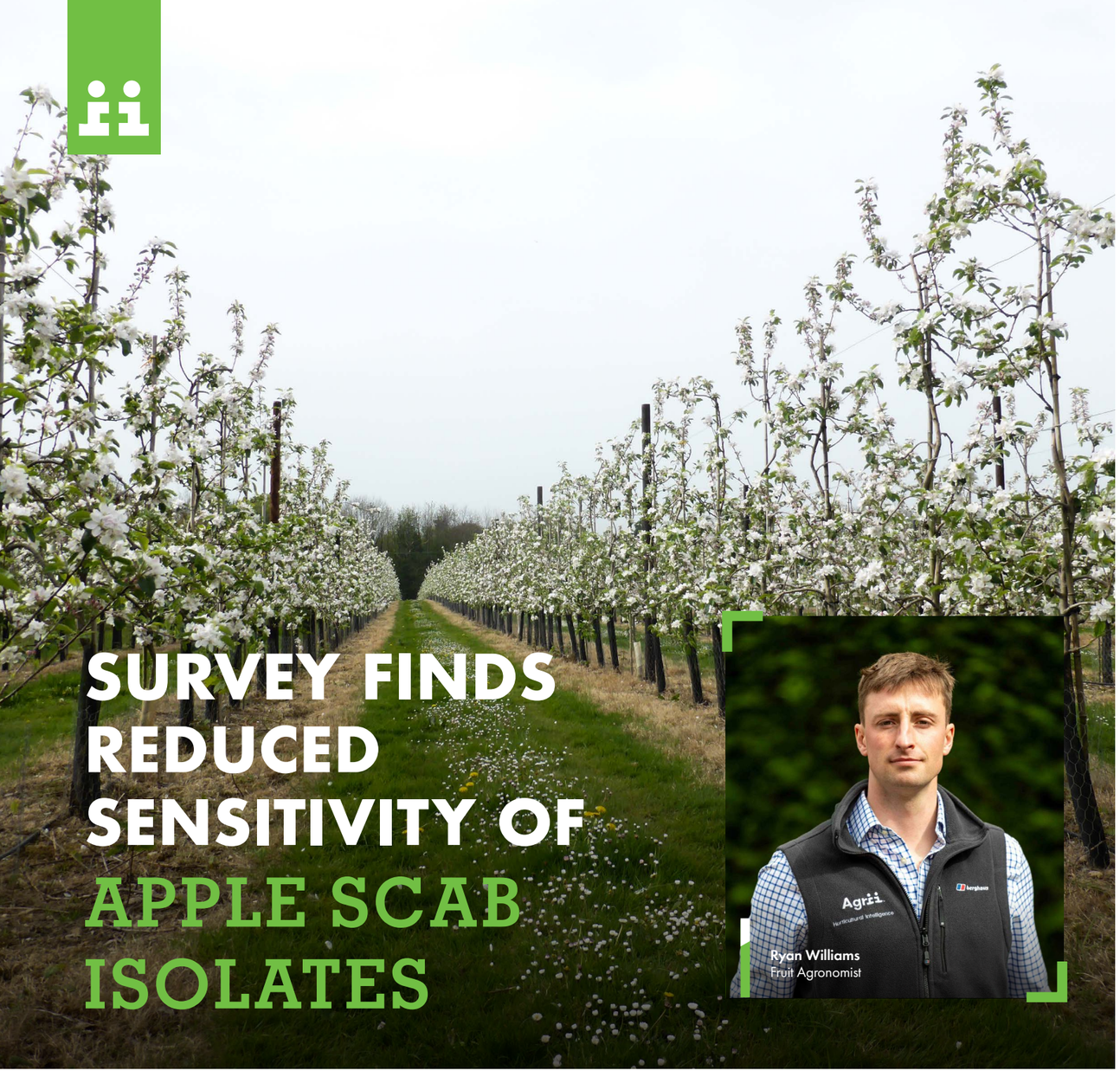
"The move into commercial agronomy fulfils a long-term objective of mine," says Mr Garratt. "It represents the opportunity to apply the breadth of my experience by combining the technical with the practical while demonstrating regard for the wider environment and positioning me to better support growers," he says.

More recent additions to the team are Ryan Williams, 29 who joined in January, and Jason Steels, 34 who joined in February. Prior to joining Agrii, Mr Williams spent more than 10 years with top fruit marketing desk, Avalon Fresh Limited, where he was employed as an agronomist and advised on other technical aspects of top and stone fruit production.

> *"I was excited by the opportunity to learn new crops, especially soft fruit and vines. Since joining, I have taken full advantage of the training programmes at Agrii to expand my skill set, from the soft skills needed to foster good customer relationships to training in soils and sustainable production systems. These have been useful in helping me develop both professionally and personally," says Mr Williams.*

Based in Spalding, Lincolnshire, Mr Steels joined from a regional distributor and agronomy business where he spent eight years working primarily with outdoor and protected soft fruit systems.

"I enjoy the technical aspects, especially the focus on biopesticides and the challenge of incorporating them into a programme that respects the principles of an integrated pest management approach. With biopesticides accounting for more than half of Agrii's R&D focus, it is personally rewarding to be joining a business that shares my enthusiasm for innovative and environmentally sustainable solutions," says Mr Steels.



SURVEY FINDS REDUCED SENSITIVITY OF APPLE SCAB ISOLATES

Surveying of apple orchards across England by Agrii advisers and researchers has revealed a shift in sensitivity to some of the fungicides commonly used to control apple scab *(Ventureia inaequalis).*

The findings do not suggest widespread resistance, but rather the need for effective product stewardship if crops are to be adequately protected in future seasons, explained Don Pendergrast, Agrii technical manager for non-combinable crops, who oversaw the study.

Notable observations include a shift in the sensitivity of apple scab isolates to captan and dithianon, two enzyme inhibitors with multi-site activity that are the cornerstone of most programmes.

Captan can be applied up to 10 times per year and dithianon up to six. The Fungicide Resistance Action Committee (FRAC) deems both to be of low risk to resistance, although reduced sensitivity has been reported in isolates subjected to reduced rates in laboratory tests.

The findings provide learnings that will be of value to growers, says Dr Pendergrast, but cautions that if ignored, the reduced protection would result in poorer disease control and a consequential drop in crop quality.

"Changes in fungicide sensitivity among apple scab isolates have been reported across Europe, New Zealand and North America, so it was important to assess the situation in England. Although worrying, the findings also show it can be managed effectively," says Dr Pendergrast.

"The positive finding is that where resistance management is practiced to a high standard, it is possible to adequately protect crops and preserve fungicide efficacy," he adds.

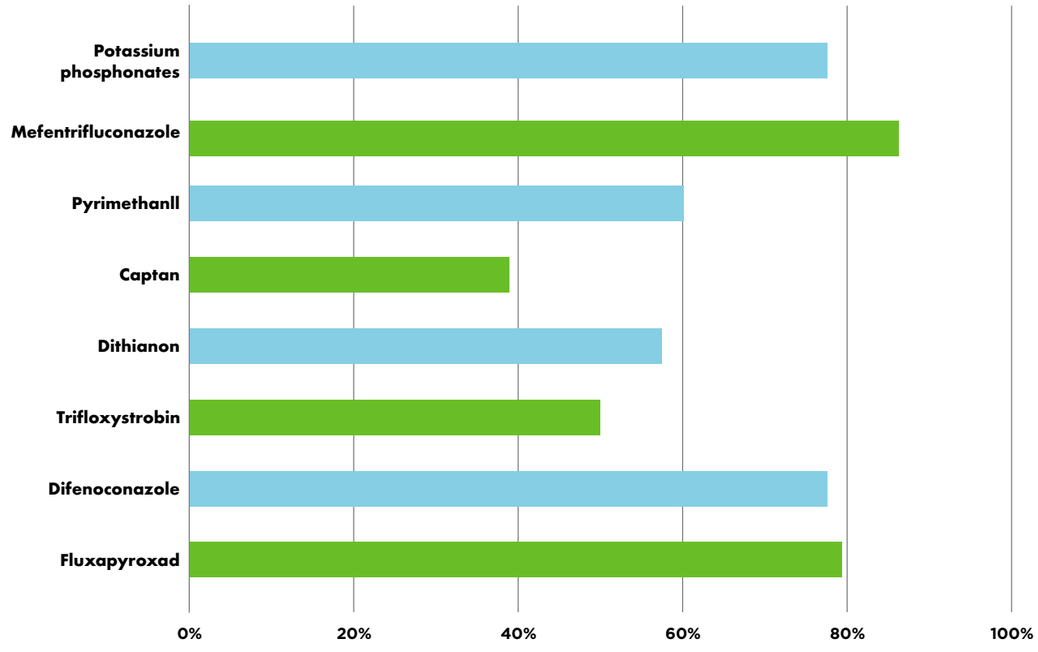
Agrii worked with the Food & Environment Research Agency (FERA) in each year of the survey (2021, '22, and '23) to assess fungicide performance against a baseline dose. Notable shifts in sensitivity were also seen with trifloxystrobin and pyrimethanil, but at varying frequencies.

Key points

- Analysis of isolates collected by Agrii has shown a reduction in fungicide sensitivity to fungicides used to control apple scab
- Notably, this includes captan and dithianon, two multisites that FRAC considers at low risk of resistance developing
- Good resistance management practices like alternating modes of action in programmes will slow down or reverse the loss of sensitivity

Shift in baseline sensitivity of apple scab isolates

Average reduction in colony area against baseline values (%)



Reference: Agrii, 2021-23

The reduced sensitivity of captan varied between sites but was consistent across all seasons, and the reduction in sensitivity to dithianon was close to that of pyrimethanil but was more frequent.

Moderate reductions in sensitivity were recorded for fluxapyroxad and difenconazole, while no change in sensitivity was observed with mefentrifluconazole or the biological fungicide potassium phosphonates.

To perform the analysis, leaf samples were collected at the end of the season but ahead of leaf fall. Greater shifts in sensitivity were observed in more restricted programmes, while sites that followed more expanded programmes where modes of action were routinely alternated between applications recorded the smallest shifts in sensitivity.

For Ryan Williams, Agrii agronomist and participant in the survey, the findings illustrate the need for responsible product stewardship when devising fungicide programmes.

"The reduced performance of captan especially shows that it is no longer acceptable to use products with multi-site activity alone or in sequential applications. While some growers and advisers are already practicing good stewardship, the industry needs to understand the significance of these results.

Fortunately, we do not have a clonal population of V. inaequalis otherwise sensitivity shifts would be permanent. This means it is possible to manage those less sensitive isolates effectively by mixing and rotating active substances. We could see evidence of this in the survey," Mr Williams says.

> *"The positive finding is that where resistance management is practiced to a high standard, it is possible to adequately protect crops and preserve fungicide efficacy," he adds.*

TRIAL FINDS SECOVER AND FLIPPER DELIVER GOOD SPIDER MITE CONTROL

Emma Smith

Secover, a silicone-based foliar spray that is not deemed a plant protection product, delivered sufficient control of two-spotted spider mite *(Tetranychus urticae)* for it to be considered as a complement to Kanemite *(acequinocyl)* in the early stages of the season.

Using her BASIS project as an opportunity to trial five acaricides with physical modes of action, Emma Smith tested the treatments on cherries grown under temporary protection. The trial took place at Lower Hope Farms, north Herefordshire, where Miss Smith was employed as a fruit technician at the time. She has since joined Agrii as an agronomist supporting growers across the West Midlands.

Growing cherries under protection improves quality and yield but the temperate environment under the canopy that does so much to protect crops from frost and heavy rain is also favourable to pest proliferation, especially spider mites.

The trial considered product performance over an 18-day period between late July and early August, with assessments made the day after application. Stated intervals between timings meant that products were not applied an equal number of times during the trial period.

Miss Smith concedes the result of the trial came as a surprise, given that two of the products tested claim control of spider mite on the label were expected to deliver greater control. Table 1 lists the products in trial.

"The trial was extremely encouraging. It demonstrated that contact-only acaricides can make a positive contribution to control as part of a well-devised programme," says Miss Smith. "Importantly, the population suppression achieved by Secover and, to a lesser extent Flipper, was enough to provide sufficient early control to delay the need for Kanemite, which can be applied no more than once per crop," she adds.

Spider mite infestations at the time of application were considerable and far beyond what might be considered early stages. Miss Smith accepts that this might have influenced the outcome. "For all products in the trial, the labels state that application should be made at the first signs of infestation. It may be that had numbers been lower, the results may have been different," she says.

Product cost was also considered, though efficacy was the principal consideration. "There are biologicals, such as predatory insects, which can provide good control of two-spotted spider mite, but the high cost and the practicalities of deploying these measures across large areas mean Secover and Flipper hold obvious appeal. They are relatively inexpensive in comparison, faster to act and easier to deploy and unlike some conventional insecticides, Secover and Flipper have favourable beneficial profiles which will be important to those growers contemplating various stewardship actions under the SFI," says Miss Smith.

Products evaluated for spider mite control in Emma Smith's trial

	Active substance	Max. no of treatments
ProTac SF	Silicon polymers	Not applicable
Majestic	malotodextrin	20
SB Plant Invigorator	sodium laurel ether sulphate	Not applicable
Flipper	fatty acids (C7-C20)	8
Secover	silicone	Not applicable

Reference: Emma Smith, BASICS, 2023.

Read the full article here:

GET RHIZA WEATHER STATIONS & SOIL MOISTURE PROBES VIA FETF118 GRANTS

RHIZA
Soil moisture station

The FETF118 funding opportunity makes now an ideal time to invest in this innovative technology.

What is the Farming Equipment and Technology Fund (FETF)?

The Farming Equipment and Technology Fund (FETF) is a £14 million fund established by the UK government to support investments in equipment, technology, and infrastructure that improves farm productivity and protects the environment.

To be eligible for the FETF118 fund, applicants must:

+ Be a farmer, grower, or other agricultural business based in England
+ Have a minimum of 3 hectares of land used for fruit, vegetable, horticultural or potato production
+ Not have already received funding for a weather station through a previous scheme

Successful applicants will receive confirmation of the grant funding, which can cover up to 40% of the eligible costs. The remaining 60% must be paid by the grower when purchasing the equipment. This presents an excellent opportunity for UK growers to obtain funding assistance with implementing an automated weather station and soil moisture monitoring system.

Application windows for the FETF118 fund:

Please note that the first application window closed on Wednesday 17th April 2024 at midday. There are another two application windows due – exact dates for these are unknown at the moment so keep an eye out!

RMA weather station and soil moisture probes from Agrii

RMA weather and soil moisture stations offer growers an innovative solution for accessing real-time, location-specific weather and soil moisture data. Growers can leverage this data along with soil moisture measurements from the probe to inform irrigation schedules, frost protection, and other operational decisions.

Features and Sensors:

RHIZA weather stations can be configured to include the following sensors and measurement tools:

+ Air temperature and humidity sensor
+ Measures ambient air temperature and relative humidity
+ Solar radiation sensor
+ Measures intensity of solar radiation and sunlight hours
+ Rain gauge
+ Measures rainfall in mm per hour or day
+ Anemometer
+ Measures wind speed and direction
+ Barometric pressure sensor
+ Monitors atmospheric pressure
+ Leaf wetness

Want more information on the FETF118 grant?
✉ - *info@agrii.co.uk*

TPP TRIALS HIGHLIGHT NEED FOR IPM IN BEATING PCN

TPP Field Event
Aug 22, Woodbridge (Suffolk)

Improving control of potato cyst nematodes (PCN) and wireworm is a focus for The Potato Partnership. Results from two years of trials highlight the fallacy of relying on nematicides as a sole means of protection.

Applying the granular nematicide Nemathorin (fosthiazate) at half rate and in sequence with Velum Prime (fluopyram) delivered yields comparable to that of full-rate Nemathorin alone, in PCN control trials run by The Potato Partnership (TPP). This is the second year where the combination of the two products has delivered yield protection equal to that of full-rate Nemathorin, says Nick Winmill, Technical, Research and Development Manager for Potatoes. The addition of a silicone-based adjuvant to Velum Prime was also found to increase yields, albeit not significantly.

"This is a compelling result. Manufacturer trials have sought to promote the performance of Velum Prime in sequence with Nemathorin, but there were some who were sceptical. We have shown that by using the two products in unison, yields can be maintained. This is good news should product renewal be granted at a reduced maximum application rate," says Mr Winmill.

PCN is one of the most significant threats to the economically worthwhile production of potatoes. Identifying the measures needed to improve control has been a research focus for TPP for the past two years. Results so far confirm the superiority of Nemathorin in protecting yield potential, but with its regulatory approval set to expire before the end of the decade – possibly sooner if the Health & Safety Executive feels inclined to follow the path of the European Commission – the need for new methods of control is exercising researchers, advisers, and growers.

THE POTATO PARTNERSHIP

TPP represents a collaborative endeavour between James Foskett Farms, growers and staff of East Suffolk Produce, CUPGRA, Agrii and independent agronomist, Graham Tomalin. It has sought to use the products and tools available to overcome the challenges threatening the sector. This is less about evaluating new or old products in isolation, explains Mr Winmill, but about seeing them as part of an integrated approach that considers cultural controls in the context of the situation.

"It is beholden on us to identify and develop solutions to these challenges that consider all available means rather than relying on one or more products. We need holistic solutions to these problems. These trials are part of our efforts to identify them," he says. For the second year, TPP trials have investigated how to improve the performance of Velum Prime as part of an integrated programme. In standalone trials, Velum Prime has delivered 50-60% of the yield protection afforded by Nemathorin, but those within the TPP are of the opinion that this could be improved if it is combined with other products and greater application of cultural measures, such as wider use of varieties with better resistance and tolerance.

In 2022, the treatment trial took place on a site with a PCN population that was 100% *Globodera rostochiensis* with an egg count that ranged from 9.9 to 38.3 eggs/gram of soil. In 2023, a separate site with a population that was 100% G. pallida was selected with an egg count of 2 to 29 eggs/gram of soil. In both years, the site was planted with Maris Peer.

"The top three performing treatments for both gross yield and marketable yield all included Nemathorin, this was either alone at full rate or at half-rate in sequence with Velum Prime with or without the inclusion of SP058 (a silicone-based adjuvant). It underlines the importance of fosthiazate in protecting the economic viability of maincrop potatoes until we can find a more sustainable answer," says Mr Winmill.

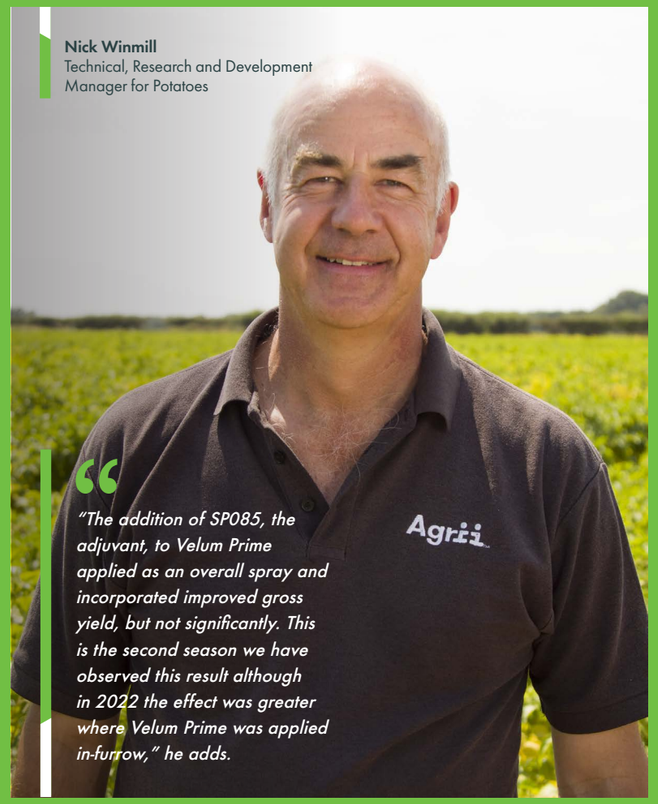
Importantly, the same treatments that delivered the highest yields also gave the lowest multiplication values.

"It is disappointing that all treatments resulted in a post-crop population increase. This confirms the accepted opinion that varietal resistance is the best means of controlling populations for the long-term. Unfortunately, commercially accepted varieties that exhibit resistance to both *G. pallida* and *G. rostochiensis* remain elusive," says Mr Winmill.

An area of further investigation is the use of a foliar-applied plant elicitor applied with the intention of improving crop health in the presence of PCN. This was applied at full crop emergence, but Mr Winmill says this may not be the best timing to fully exploit its contribution.

"Given what we know about *G. pallida* and its hatching duration of up to 18 weeks is it fair to expect a foliar spray at crop emergence to support long-lasting action? Perhaps a more logical approach would be to apply a follow-up spray or in sequence with a conventional nematicide at the eight-week point when activity begins to fall away?" says Mr Winmill.

"The addition of SP085, the adjuvant, to Velum Prime applied as an overall spray and incorporated improved gross yield, but not significantly. This is the second season we have observed this result although in 2022 the effect was greater where Velum Prime was applied in-furrow," he adds.



Nick Winmill
Technical, Research and Development Manager for Potatoes

> *"The addition of SP085, the adjuvant, to Velum Prime applied as an overall spray and incorporated improved gross yield, but not significantly. This is the second season we have observed this result although in 2022 the effect was greater where Velum Prime was applied in-furrow," he adds.*

Key points

- Mixing Velum Prime with a 50% dose of Nemathorin delivers comparable yields to full-rate Nemathorin alone
- The addition of SP058 (a silicone-based adjuvant) improves the performance of Velum Prime
- All treatments resulted in a post-crop PCN population increase

MANAGING INPUTS AND MAXIMISING NUTRITION

Managing fertiliser variable costs can lead growers to make rash decisions to cut back or opt for a PK holiday purely to manage input costs. Adopting practices to target nutrients specific to the soil and crop needs is a more sustainable alternative.

Tom Land
Fertiliser Technical Manager

Soil testing via RHIZA or standard sampling is the foundation of any nutrient management decision, but understanding how to achieve the best from inputs in relation to soil nutrients will help enormously. Couple these results with broad-spectrum macro, micronutrients, organic matter, and soil texture, and you have a complete understanding of nutrient availability. Understanding these values helps to target specific products.

An economic decision for nitrogen inputs can be made by calculating the Break Even Ratio (BER). This is the ratio of grain sold per kg and the cost of each Kg of N applied. To get the most out of your applied N, it is vital to remember the pivotal role that sulphur plays in NUE (Nitrogen Use Efficiency). The absence of sulphur directly correlates to the reduction of nitrogen uptake and protein synthesis in the plant. If sulphur is deficient, you are spending capital on nitrogen for no gain. Subtle nitrogen input adjustments for BER can be made, but it is certainly not the only factor.

Maintaining soils at the appropriate index mitigates any possible seasonal problems (possibly caused by weather) and maximises crop output.

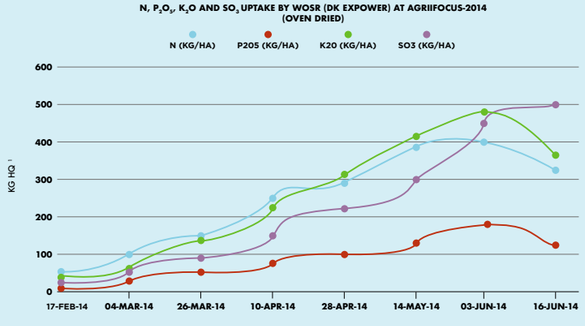
Clay soils can hold high amounts of P, but is the P available, and what could cause possible limitations or lockup? Often, high-pH clay soils contain high proportions of calcium, which can lock up nutrients such as phosphate. Sands, for example, tend to have low calcium and low potassium levels. Hence, understanding soil texture can be hugely important.

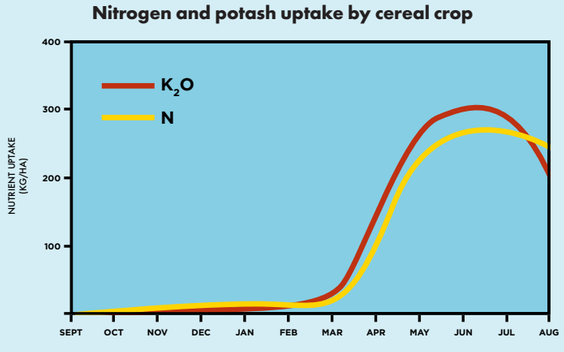
For where P and K are concerned, they are based on crop demand, and this is a constant. It's essential that an adequate supply of both P and K is achieved from the soil. Once soils have dropped an index point, like from index 2 to index 1, reversing this change would require a lift of 10 mg/l, thus requiring 400-600 kgs/ha P2O5 or 869 to 1304 kgs/ha TSP, which no grower would ever consider doing. Maintaining a constant level of available nutrients is very important.

Certainly, growers on high-index soils should not waste money on fertilisers where they are not needed. However, tools such as grain and straw testing help to identify if crops are inefficiently using the soil reserves. This is where products such as Agrii-Start Release can be very useful in increasing P availability.

Often, a large amount of focus can be placed on phosphorus; however, potassium (K) is also an essential nutrient for plant uptake. Throughout the growing season, cereal crops take up around 300 kgs K2O from soils. We have carried out some trial work investigating K uptake at one of our technology centres, AgriiFocus, and the results highlighted that OSR took up to 500 kgs of K2O. We do not need to supply crops with these amounts of nutrient in fertiliser, but it is necessary to understand that crops pull up large amounts of K from the soil. Going back to practical aspects, good soil structure is essential to allow successful uptake from soils.

There is such a strong link to K and N uptake that neither should be considered in isolation. Most spring crops are inefficient users of P and K; their root systems are not as advanced as winter cereal crops, which is why responses to fresh P and K tend to be greater in spring crops. For example, spring barley takes up around 7.2 kgs K2O per day during the growing season.





FUELLING GROWTH WITH LIQUID FERTILISER TRAMLINES PODCAST

In this episode, host Tony Smith speaks with Nick Bumford, farm director at Guiting Manor Farms ltd and Rob Willey, national fertiliser commercial manager at Agrii.

This podcast explores and understands the benefit of liquid fertilisers for improving crop performance and the performance of the farm business. Also, can liquid fertilisers help us balance the needs of the crop with the needs of the environment?

"I like the fact that I don't need to have a forklift tied up unloading and I don't need to be putting solid materials into my precious building space, which can be used for other things. That's quite a big consideration from a delivery and storage perspective. It's what I would call seamless really" *Nick Bumford (Guiting Manor Farms Ltd, Director)*

"I've had all sorts of scare mongering over the years about liquid fertiliser damaging the sprayer. Not true.. a good operator will always rinse his machine off at the end of the day, it takes minutes" *Nick Bumford (Guiting Manor Farms Ltd, Director)*

"Post the 31st of March 2024, there is a requirement to use an inhibitor in conjunction with liquid fertiliser if it contains urea. And that will be policed under the Red Tractor scheme. This is to limit losses through the lateralisation to the atmosphere as the weather warms up through the spring" *Rob Willey (Agrii, Fertiliser Commercial Manager)*

RHIZA CASE STUDY:
HOLTON FARMS, LINCOLNSHIRE

The 1200-hectare Holton Farms in north-east Lincolnshire is fully invested in precision farming technology. For farm manager Nick Young, data in all its forms has been central to improving profitability.

Crop yield data is collected by the John Deere 790 combine harvester fitted the firm's proprietary GreenStar system. GreenStar is also fitted to the farm's SAM sprayer while the fleet of CASE iH tractors use CASE's native program, AFS Connect. The tractors connect to the farms two seed drills, a John Deere 750A and a Weaving Sabre Tine.

To bring all the data together for complete analysis, Holton Farms turned to RHIZA.

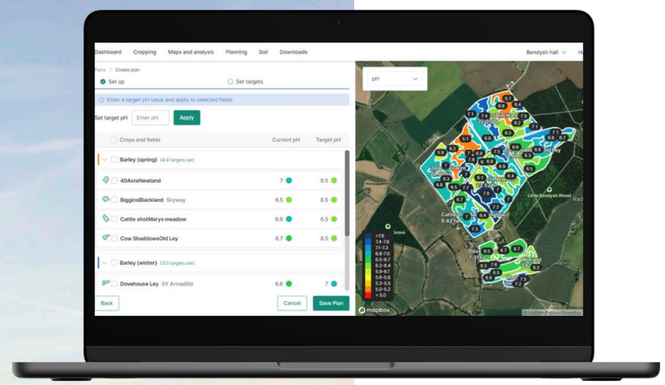
The priority was to produce soil conductivity maps that would be the foundation of a move to variable-rate seeding. The aim is to scan roughly 150 hectares a year, beginning with those soil types with a higher magnesium content. On non-mapped fields, Normalized Difference Vegetation Index (NDVI) and Green Chlorophyll Vegetation Index (GCVI) imagery are used to produce seed maps.

These maps are impressively accurate, and Nick has worried more than once that he will run out of seed. It hasn't happened yet.

Seed maps can also be adapted to reflect areas where rates are to be increased for other reasons, such as previously identified patches where black-grass presents a challenge or on headlands where compaction might hinder establishment. It also makes life easier and removes delays and difficulties in getting equipment to work together.

When the drill operator, who has been on the farm for 43 years, tells you the system is not just easy-to-use, but also worthwhile, it is immensely reassuring. Aside from the saving in seed costs, the crops develop far more evenly. To the operators, this is highly satisfying.

From a management perspective, one of the main advantages of the Contour platform is that serves as a single point for data analysis. With other systems this is not always possible, being able to layer soil maps, field boundaries, satellite imagery and both NDVI and GCVI makes analysis easier and more complete.



CONTOUR: WHAT TO EXPECT THIS SUMMER

Lime Planning

The new Lime Planning tool in Contour is due to be launched this summer, enabling you to manage lime applications more efficiently. Lime is key to providing the optimum soil pH for nutrient uptake by the crop; it also has the added benefit of improving soil structure, which leads to an increase in crop yields.

Contour's lime planning tool gives you complete flexibility by planning across either a whole farm or down to crop level, putting you in control of where applications need to be made.

In the first release, you can build custom rulesets for either ground limestone or granulated lime. The tool looks at the pH values from your most recent soil tests within Contour and applies a rate to achieve your target pH. It then allows you to make your final adjustments through bulk adjust and editing tools before exporting GPS files ready for a variable rate controller.

This new release means that whether you are planning whole farm nutrient management or creating variable rate applications, all of your data and planning tools are together in our digital Contour platform.

For more information, speak to your local Crop Input Specialist.

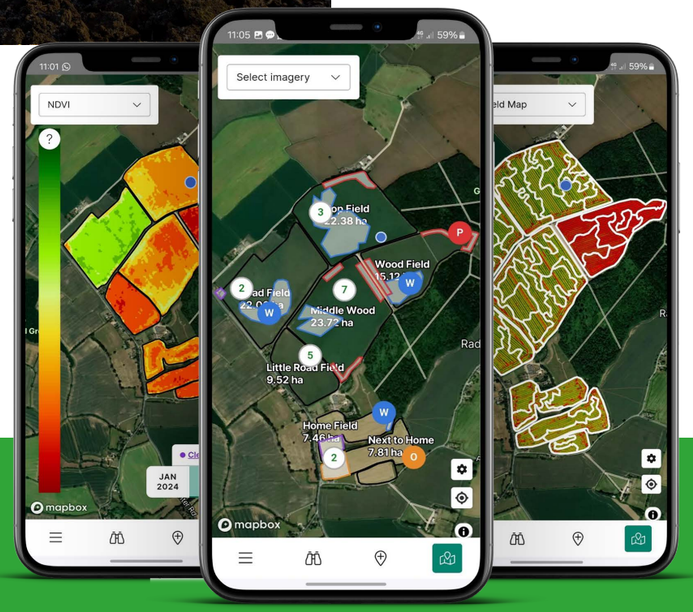
Contour Mobile

The all-new Contour Mobile app is due to be launched in late Spring 24.

This brand-new app completely replaces the existing Contour app, which you have become familiar with, and now utilises many of the features from the desktop version of Contour, meaning that you can transition from the office to the field without hesitation.

Access satellite imagery, yield maps and cropping along with all of your soil details on the go, or see your live location, allowing you to navigate to areas of interest. Plot observations to record problem areas within the field, which can also aid with evidencing various SFI actions that may be active across the farm. All observations automatically sync across to Contour desktop, ready to use within planning tools or kept safe for record keeping.

You will be automatically transitioned across when the new app is launched, so no need to download a different app. Keep your eyes peeled for a new update!



For more information on the latest Contour releases, or for any RHIZA enquiries, please get in touch with one of our team:

- *info@rhizadigital.co.uk*
- *www.rhizadigital.co.uk*

NEW TECHNOLOGY FARMS INITIATIVE SET TO DRIVE NEW LEVELS OF PRODUCTION EFFICIENCY

Lucy Cottingham

Agrii's Digital Technology Farms (DTF) initiative aims to measure the productivity and environmental benefits achieved by integrating new data capture, analysis and management strategies with the first of four planned DTF centres now in operation.

New technology has the potential to lift production to new heights of efficiency while delivering a new era of sustainable food production for all, believes Agrii's digital agronomy development manager Lucy Cottingham.

But the biggest benefits will be achieved through a synergy of different technologies working together to inform best practice with a level of detail and farm-specific insight that could only have been dreamt of a few years ago, she believes.

"We're entering an era where farming by averages is rapidly being replaced by management based on accurate and individual data which, in turn, will underpin a level of precision not seen before.

"Whether it's using inputs as cost-effectively as possible, minimising potential environmental issues, reducing the carbon footprint of production or optimising yields from available resources, data will become the agronomist's most powerful tool.

"The biggest wins will come from combining data from a variety of sources and technologies and turning this into in-field agronomic and management practices capable of truly transforming farming businesses."

With this in mind, Agrii's DTF initiative slots neatly into the company's wider R&D strategy with a focus on using several connected technologies that can be used to make agronomic decisions at field scale throughout the growing season, she says.

"Our aim is to bring the 'field of the future' to our agronomists and growers today through data gathered from a variety of digital tools and technologies in a connected way to both support and drive crop management decisions throughout the year.

"Furthermore, this will give us the opportunity to develop, evaluate and demonstrate the most effective technologies at commercial farm scale and share this with our wider customer base. By comparing standard farm practices alongside decisions informed by our combined new technologies, we aim to identify not just greater efficiency but real benefits on a farm's triple bottom line too."

Big fans of technology

The first of Agrii's DTF centres to be up and running is at the 2400ha Revesby Estate near Boston in Lincolnshire, where farms manager Peter Cartwright is already a signed-up advocate of data-driven farming.

"We're big fans of technology," he explains. "All our tractors are on satellite controlled RTK positioning, for example, and we're operating a 10m controlled traffic farming system across the business.

"We use a precision farming approach with variable rate seed and nitrogen applications, we've been direct drilling for nearly ten years now and we've been growing cover crops for some time. I would say we're a pretty forward thinking business.

"We even bought our new combine harvester based on the accuracy of its yield monitoring and have recently installed a new weighbridge with an infrared sensor to measure nitrogen content of the grain.

"Fortunately, the combine and the weighbridge mirror each other perfectly, which is reassuring. Our thinking is very much if you can't measure it, you can't manage it.

> *"We even measured organic matter by field zone before it was a requirement for SFI with all yield and soil analysis data logged back into Rhiza and we're moving to using this for all our agronomy recording and management in the future."*

Arable production at Revesby currently consists of 1100ha of commercial cropping based on a seven year rotation featuring winter wheat, winter barley, oilseed rape, spring oats, spring beans, marrowfat peas and canary grass seed. Optimising input use is very much a priority across the business, with the use of Skippy Scout drone technology to measure crop GAI and give an accurate picture of Nitrogen requirements being a good example of this, Peter says.

"We don't want to put on more of anything than we need to and generally our attitude is that whilst we're keen to use less inputs, we need to know we're still going to get the same margins if we do this.

"So, in the past when we've done N rate trials, for example, and seen great results with 270kg N/ha in wheat, we've settled at 220kg N/ha - up from 190kg N/ha when I first joined - and our yields are still about 1.0t/ha more than they were.

"At the end of the day, we obviously want to be a sustainable business and protect the environment, but we also need to make money to invest in the future and that's where the DTF initiative comes in."


Field of the future
Revesby Estate

Enhanced decision making

Agrii's technology trials manager Jonathan Trotter says Revesby Estate's approach to combining productivity improvements with a solid environmental focus, makes it the perfect partner for the project.

"Peter's attitude to technology is really positive and we want to be able to capitalise on that and drive some exciting new ideas forward. Revesby is a great environment to do just that.

"The idea behind DTF is to understand how we can leverage and integrate different technologies to make decisions on-farm and see how they can enhance decision making compared to a traditional agronomic approach. So, while the Skippy Scout drone system we're using with Peter can monitor above ground crop growth, information from this could be enhanced by data on below ground nitrogen levels from in-situ soil nitrogen sensors such as Plentysense nitrogen blades.

"These sense N-availability at three different levels in the soil - 10, 20 and 40cm - and there is a telemetry head that sits on top of them that tells us in real time what N the soil has. We can then understand how the N is moving through the soil profile or how we can improve decision making with when and how much N we should be applying."

The DTF site at Revesby is a 40ha field with 10 different soil zones that have been mapped with each featuring a different technology or combination of technologies that could all eventually link in to the Rhiza platform, he explains.

"Each zone has at least one N sensor in it. Some of the zones have a Soiltech Wireless soil moisture and temperature sensor dug into the ground, so that's feeding us information all the time as well.

"Another system being used is Fieldmate disease monitoring which is based on a small weather station sitting in the field that provides disease predictions for different crops based on climate, leaf wetness and other factors.
"So, this combination of technologies should really give us a level of data and insight that we have not seen before.

"Then depending on what the technology is telling us, we can make the most informed decisions around the crop's management moving forward based on outputs from these innovative technologies such as field-by-field crop nutrition and agronomy plans."

New technology journey

Peter Cartwright believes Revesby Estate is only at the start of its technology journey and has high expectations of the DTF initiative.

"We would love to use drones to fly the farm from the farm office and see what problems are emerging before a human eye can pick then out, even it is just identifying hotspots that you can then walk around with the agronomist.

"I can see advantages from using drones for applications, too. If we could get a drone to identify and drop seed in bare patches within OSR, for example, that would be a really exciting development.

"Even it is something like phacelia just to block out light to stop blackgrass coming through, that would be really beneficial.

"I'd like to think we are sitting here in five years' time and we have technology that can identify diseases better, help us utilise N more efficiently and spot weed problems before they take hold. Unlocking technology to improve productivity and use inputs more effectively in this way is going to lead to far more sustainable production long-term than simply chasing yields and trying to produce 20t/ha wheat every year."

Key points

- Revesby Estate is the first of four planned Agrii Digital Technology Farms
- The DTF site at Revesby is a 40ha field with 10 different soil zones that have been mapped, each featuring a different technology or combination of technologies
- Agrii expect these to be a platform to test and demonstrate the benefits of new digital farming technologies

HOW TO REJUVENATE TIRED AND WINTER-WORN GRASSLAND

The wet conditions throughout the winter and early spring period have caused further damage to already hard-hit grassland and delayed reseed plans for many, but there are still many options open for rejuvenating swards in 2024.

One of the most important jobs for grassland farmers this spring is assessing which underperforming fields need to be re-seeded or overseeded during the year and making a plan for when the best time to do this is, says Agrii National Grass, Roots, and Environmental Seeds Manager Adam Simper.

"Persevering with an existing sward that is winter-damaged or now full of weed grasses is always a false economy, with both yield and quality likely to be reduced.

"Timings might not be ideal, but this is a year where some difficult decisions need to be taken and compromises made.

“A full reseed will not only boost overall yield, improvements in D value, ME, protein and sugar content will help maximise milk yield and DLWG, delivering better returns from grazing and forage.”

Three key considerations

Three key areas will be particularly important this season, he points out.

"Firstly, it's important to ensure old swards are successfully killed off with a glyphosate-based product before preparation of the seedbed begins.

"Ensure there is sufficient new growth for the chemical to be taken up and that an appropriate rate is applied under correct conditions. Whilst this treatment will control actively growing plants, it will not kill dormant weed seed in the soil.

"Next on the list is to think about nutrition requirements. The high levels of rainfall will have potentially washed key nutrients from the soil and mineralisation of nitrogen is likely to have been low to date.

"It's therefore important to sample the fields to determine pH, P,K and Mg indices. Walk in a ‘W’ around the field taking soil samples to a depth of 15cm if ploughing or 7.5cm if only cultivating the surface."Any problems seen will then need addressing with lime and an appropriate fertiliser regime.

"Finally, seedbeds will also need careful preparation following the challenging conditions with the aim of preparing a firm, fine seedbed, making sure ring rolling is carried out after drilling to maximise seed to soil contact."

Another important factor is to make sure the right grass seed mixture is chosen based on its intended end use and individual growing conditions, Adam Simper advises.

"Select mixtures with a high proportion of new grass and clover varieties which have recently been added to the Grass and Clover Recommended List in order to maximise advances in breeding programs and help increase on-farm profitability from home grown forage.

"Our approach is to pick the best varieties from a range of breeders to capitalise on individual characteristics such as cutting and grazing yields, D value, ground cover scores, disease resistance and seasonal growth. It's also important to choose a no clover mixture if significant weed problems are expected - you can always introduce clover at a later date once a herbicide has been applied to the sward."

New sward suitability

Once established, suitability for grazing can be established by pulling gently at the grass blades between thumb and finger, he explains.

"If the root system is pulled out then the plant is not ready to be grazed. If the roots stay in the ground and the grass blades rip off, then graze periodically from 8-12cm down to 4-6cm.

"This will encourage the plant to tiller out and help achieve a dense leafy sward. Gentle first grazings also allow sunlight to reach and stimulate the grass tiller buds and the clover’s growing points."

Overseeding can be an option in some cases, he points out, as it is a simple but effective way to rejuvenate old or damaged grass leys at a lower cost than a full reseed, he adds.

"Overseeding can also be more efficient and reduce the amount of time that home-grown grass forage is out of production.

"Timing is key with the main aim being to minimise competition from the existing sward. Overseeding can take place up until the end of April, but later summer is also a good option as grasses are not growing as vigorously as in May or June.

"Careful consideration also needs to be given when choosing where to overseed, an open sward is needed, as a thick old sward will be very hard to open out to allow the seeds to reach the soil so then a full reseed may be a better option."

DON’T PUSH SFI BOUNDARIES TOO FAR, WARNS FARM BUSINESS ADVISER

Growers and their advisers must not push current Sustainable Farming Incentive boundaries too far. As well as risking trouble for themselves, exploiting perceived loopholes, ambiguities or absence of detail in the scheme could have serious consequences for the whole industry.

This is the timely warning from Agrii farm business consultant, Paul Pickford as part of his work helping farm businesses across the country improve their sustainability and recoup as much of their diminishing BPS payments as possible.

“It’s important for everyone to make the most of SFI,” he stresses. “Continuing additions and changes have made the scheme much more realistic in so many ways. Not least, in being far less narrow and prescriptive in all the nuts and bolts of what, when and how than previous stewardship schemes.

“But this flexibility makes it equally important for everyone to work within the spirit rather than just to the letter of the individual actions in their agreements.

“A lot of time and effort has been spent in persuading Government that those who manage the land are the best people to create, maintain and enhance wildlife habitats alongside their primary food-production responsibilities,” Mr Pickford points out.

“So, what message does it send if we immediately start to ‘duck and dive’ in our efforts to exploit the very flexibility we have long asked for and now been given? And what will happen when Defra sees we are doing this?”

Well, the consequences have clearly been spelled out by Defra minister, Mark Spencer in his recent warning that ‘if people start to take the mickey we will have to take action to stop it from happening’. Which also tells us that he and his team are well-aware of some of the dodges currently being bandied around.

Dodges like claiming £853/ha for winter bird food on arable land (AHL2) planted immediately after harvest at a field-scale ahead of spring cropping.

“You may be able to persuade yourself that doing this meets the action’s key aim of providing a supply of seeds for smaller farmland birds from late autumn until late winter,” says Mr Pickford. “But does it really meet the action’s stated purposes of (a) providing food resources for farmland birds, especially in late autumn and winter, and (b) encouraging flowering plants in the summer, which will benefit insects including bumblebees, solitary bees, butterflies and hoverflies?

“It doesn’t take a genius to see that this really isn’t cricket. Wild bird seed mixes sown after the end of June are unlikely to provide much, if any, summer flowering benefit for most insects. Nor are they likely to set enough seed to be quality winter food for the birds.

“The £853/ha of offer with AHL2 is clearly compensation for foregoing a harvest in favour of supporting farmland wildlife,” he explains. “And it was always seen as an opportunity for difficult corners and marginal areas rather than a field-scale rotational action.

“So, if we want to plant something after harvest ahead of a spring crop for heaven’s sake let’s fulfil the SFI intention as honestly as we can and claim £129/ha for a well-established multi-species winter cover (SAM2) instead.

“A well-established multi-species cover – with the emphasis on well-established and multi-species rather than just barn sweepings spread willy-nilly onto stubble – over the winter months will definitely meet the defined purposes of protecting the soil surface and/or providing root growth that benefits soil structure, supports soil biology and minimises nutrient leaching, soil erosion and runoff. And we can combine it with other actions on the same area – like no insecticide on the following spring crop – to add to its SFI value.”

It may not be perfect but Mr Pickford is adamant that SFI is fast becoming the fair scheme our industry has long argued for, giving everyone the flexibility to achieve the desired outcomes in ways that best complement their individual conditions and businesses.

He insists that the onus is on the farming industry to make SFI work and prove (with evidence) that the actions taken achieve these outcomes – or, at the very least, are an honest attempt to do so. If the evidence isn’t there or the action taken cannot reasonably be justified then the ‘public money for public goods’ is unlikely to be forthcoming or will have to be repaid.

“It’s an inescapable fact too that SFI will continue to change and develop,” he adds. “Whether it does so in ways which give us more flexibility and opportunities for delivering the public goods that Government wants or in ways that are more restrictive and less rewarding is also entirely up to us.

“We’ve been given the responsibility for delivering greater environmental sustainability with the flexibility we need to do so and increasingly decent rewards. For heaven’s sake, let’s rise to this challenge responsibly without trying to ‘pull fast ones’. If we don’t, we haven’t a decent a leg to stand in addressing the criticisms of the many NGOs and campaigners who put their own agendas so far above the future of our industry.”

NEW ADDITIONS TO THE AGRII MASTERLEYS AND COVER CROP RANGE TO CATER FOR NEW SFI REQUIREMENTS

As growers throughout England review their current farming practices and adapt traditional rotations to allow for the inclusion of new SFI options available to them, Agrii have developed new and dedicated seed mixtures that supply solutions to meet the aims of popular schemes. At Agrii, our belief is that SFI mixture selection should not only meet the criteria set within official guidelines, but also return maximum production ability and benefits within rotations from maintaining both seed quality and variety agronomics.

For more information regarding our leading SFI Seed options, to include many existing Mixtures that also qualify for other SFI Schemes, please speak to your local Agrii Contact today or request a free copy of our Grass and Roots Brochure or Cover Crops Guide.

AGRII SFI SAM3 GRAZING	
Agrii SFI SAM3 Grazing has been designed to produce high yields of good quality forage for all livestock. The inclusion of AberZeus Intermediate Diploid will help to create a dense sward, and along with the legumes and herbs, providing a resilient, valuable, and nutrient rich forage during periods of dry weather.	
+ **4.80 kg Lofa** Festulolium	+ **0.35 kg Alsike Clover**
+ **6.50 kg Nifty** Intermediate Diploid	+ **0.65 kg Plantain**
+ **2.50 kg Natosha** Late Tetraploid	+ **0.45 kg Chicory**
+ **0.80 kg Tower** Tall fescue	+ **0.20 kg Sheeps Burnet**
+ **1.15 kg Comer** Timothy	+ **0.20 kg Sheeps Parsley**
+ **0.50 kg Laura** Meadow fescue	+ **0.05 kg Yarrow**
+ **1.10 kg Grazing** White clover blend	+ **Packed in 20.00 kg Bags**
+ **0.75 kg Red clover blend**	+ **Suggested Seed Rate 12.00 – 14 kg/acre**

AGRII SFI SAM3 OVERSEEDING	
Agrii SFI SAM3 Overseeding can be drilled into existing pastures where a grower is looking to increase the population of grass, legumes, and herb species within the sward to meet the aims of the scheme. As with all overseeding, any thatch in the base of the existing sward should be removed to allow good seed to soil contact and to also enhance light penetration to the young and emerging seedlings. For increased establishment, do not drill deeper than 10mm.	
+ **4.95 kg Lofa** Festulolium	+ **0.65 kg Plantain**
+ **0.90 kg Tower** Tall Fescue	+ **0.30 kg Chicory**
+ **0.50 kg Comer** Timothy	+ **0.10 kg Sheeps Burnet**
+ **0.50 kg Laura** Meadow fescue	+ **0.08 kg Sheeps Parsley**
+ **1.00 kg Dual Purpose** White clover blend	+ **0.02 kg Yarrow**
+ **0.75 kg Red clover blend**	+ **Packed in 10.00 kg Bags**
+ **0.25 kg Alsike clover**	+ **Suggested Seed Rate 10.00 kg/acre**

AGRII SFI SAM3 NO RED CLOVER	
Agrii SFI SAM3 No Red Clover has been formulated for the grazing of Livestock. It does not contain any Red Clover to ensure it does not cause bloat in Cattle when grazed. Red Clovers also contain oestrogen which can affect the fertility of breeding ewes. The varied species within the formulation will provide a resilient, valuable, and nutrient rich forage during periods of dry weather.	
+ **5.30 kg Lofa** Festulolium	+ **0.55 kg Alsike Clover**
+ **6.00 kg Nifty** Intermediate Diploid	+ **0.65 kg Plantain**
+ **2.50 kg Natosha** Late Tetraploid	+ **0.45 kg Chicory**
+ **0.80 kg Tower** Tall fescue	+ **0.20 kg Sheeps Burnet**
+ **1.15 kg Comer** Timothy	+ **0.20 kg Sheeps Parsley**
+ **0.50 kg Laura** Meadow fescue	+ **0.05 kg Yarrow**
+ **1.55 kg Grazing** White clover blend	+ **Packed in 20.00 kg Bags**
+ **0.10 kg Birdsfoot Trefoil**	+ **Suggested Seed Rate 12.00 – 14 kg/acre**

AGRII SFI SAM3 CUTTING	
Agrii SFI SAM3 Cutting will produce large cuts of quality silage which will also provide forage with variety when fed. If left to over mature, Chicory can become woody and cause fermentation issues when baled and wrapped as the stems can easily pierce film. Rejections of this woody material can also happen when fed, for these reasons, this mixture does not include Chicory.	
+ **4.80 kg Lofa** Festulolium	+ **0.35 kg Alsike Clover**
+ **2.50 kg Boyne** Intermediate Diploid	+ **0.65 kg Plantain**
+ **6.50 kg Natosha** Late Tetraploid	+ **0.20 kg Sheeps Burnet**
+ **0.80 kg Tower** Tall fescue	+ **0.20 kg Sheeps Parsley**
+ **1.15 kg Comer** Timothy	+ **0.45 kg Sainfoin**
+ **0.50 kg Laura** Meadow fescue	+ **0.05 kg Yarrow**
+ **1.10 kg Cutting** White clover blend	+ **Packed in 20.00 kg Bags**
+ **0.75 kg Red clover blend**	+ **Suggested Seed Rate 12.00 – 14 kg/acre**

Agrii NUM3 A – 57% Legumes	%	Kgs/ha	Seeds/m²
Common vetch	25	5	7
Common Buckwheat	25	5	20
Purple vetch	15	3	7
Crimson Clover	10	2	57
Spring linseed	10	2	25
Phacelia	8	1.6	94
Berseem Clover	7	1.4	46
Seed rate 20 kg/ha	100	20	256
Mix suited to medium/light soil types.			

Agrii NUM3 B – 38% Legumes	%	Kgs/ha	Seeds/m²
Common Buckwheat	35	7	28
Spring Linseed	20	4	50
Common vetch	15	3	4
Purple vetch	10	2	5
Crimson Clover	8	1.6	45
Phacelia	7	1.4	82
Berseem Clover	5	1	33
Seed rate 20 kg/ha	100	20	247
Mix suited to heavy/medium soil types.			

AGRII ATTEND BORDERWAY DAIRY EXPO

A team of colleagues from our Tanks & Drainage, Seed, and RHIZA departments recently had a stand at the Borderway Dairy Expo held in Carlisle. They exhibited the broad range of services and support available from Agrii to deliver sustainable and profitable farming.

These services included rainwater harvesting systems (eligible for FETF grants) and advice and support on SFI available to farmers. With a comprehensive range of forage brochures on display at the show, it started many conversations with growers on how they can improve yields and quality of home-grown forage in our current climate to help build a profitable and resilient business and how the SFI seed options will fit in with their management regimes to help bolster this.

The working demonstration of the filter kits used for rainwater harvesting drew considerable interest. More and more farms are recognising the benefits of installing these systems, one of which is reducing reliance on mains water, which lowers water bills.

For more information on rainwater harvesting, contact Jackie Thompson
✉ - *jackie.thompson@agrii.co.uk*

EVENTS

Cereals
THE ARABLE EVENT

Groundswell

Cereals

11th & 12th June

Stand number: 516

Agrii are excited to be making a return to Cereals this year with a plot that demonstrates the breadth of our seed offering. Join us at stand 516 to meet representatives from Agrii as well as RHIZA, Viterra, Secobra and DroneAg. We look forward to seeing you there!

Groundswell

26th & 27th June

Stand number: DN2A

This year at Groundswell, Agrii is excited to collaborate with Weaving Machinery. Exploring regenerative farming principles, such as soil health and structure, Sustainable Farming Incentives (SFIs), cover and catch crops, plant health and nutrition, profitability and benchmarking, and carbon markets. Join us for live demonstrations by Weaving Machinery on our 4 cover crop demonstration strips. See you there!

AGRII iFARMS

Watch out for your invite by email this year

This summer, Agrii will continue to showcase extensive R&D and agronomic knowledge and advice across the length of the UK. Find your local event and sign up to attend now:

5th June – Leadenham iFarm, Lincolnshire
7th June – Newton Purcell iFarm, Buckingham
10th June – Stow Longa Farmer Day, Cambridgeshire
10th June – Holderness iFarm, Humberside
11th June – Winderton iFarm, Warwickshire
13th June – Longhirst iFarm, Northumberland
18th June – South West iFarm, Cornwall
18th June – Eyemouth iFarm, Berwickshire
18th June – Bedfordia Farms, Bedford
19th June – Dorset iFarm, Blandford
19th June – Throws Farm Open Day, Essex
19th June – Bishop Burton iFarm, Yorkshire
20th June – Lenham iFarm, Kent
20th June – Bartonfields iFarm
24th June – Old Appleton Farms, Yorkshire
24th June – Kinross iFarm, Kinross
25th June – Ludlow iFarm, Herefordshire
26th June – Revesby iFarm, Lincolnshire
26th June – Black Isle iFarm, Ross-shire
27th June – Stow Longa Farmer Day (Anglia region only)
27th June – Dunecht iFarm, Aberdeenshire
1st July – Stow Longa Farmer Day, Cambridgeshire
2nd July – Callow, Herefordshire
3rd July – AgriiFocus Technology Centre, Wiltshire
4th July – South Wales

SIGN UP!

Sign up for your local iFarm event on the Agrii website