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Are SFI concerns warranted
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Volume 26 Number 4
May 2024

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Editor's Pick

It's all too apparent that in the blink of an eye, life as we know it can change irrevocably. And that's particularly the case in agriculture which is known for being an industry fraught with dangers and risks.

Just last month we featured long-standing friend of *CPM*, Tim Parton, having visited his farm in South Staffordshire back in March. The news of Tim's accident has shocked many of us, for not only is Tim an innovative arable farmer, but he's also an incredibly generous human being who's greatly respected.

Our thoughts are with Tim and his loved ones as they navigate the uncertainty of the weeks and months ahead. For those in a position to do so, a rehabilitation fund has been set up to help the family to adjust to their new way of life with no donation too small *https://gofund.me/cebe63c3*

I'd also like to extend my personal thoughts to anyone in our sector who's currently facing difficulties, either visible or unseen. *CPM* may be a technical journal but we're all humans living what can often be chaotic and challenging lives. And I know first-hand what a rollercoaster being unwell can be.

As for the magazine, we've packed a lot in again including three factory/site visits, two product launches, a raft of trial results and previewing the upcoming Cereals Event!

For many, Adepidyn has been a long time coming and we share how it's finally being presented to the market as the Miravis Plus with Era co-pack (page 12). We spoke to some of the industry's leading experts for their views, and it seems all agree it's a positive addition.

Then, on page 26, I provide insight into the Omnia EasyPlan upgrade from Hutchinsons. In a season when it's probably not the time to increase prices, users will be pleased to see that the improvements are included within the existing service levels at no additional cost.

I have to admit, it was a pleasure to speak to the staff at FMC's site at Pentre in North Wales (page 33). I've been on rather a lot of factory tours in my time and they can become a little same-y. But the passion for what they do and how the site is supporting local employment, as well as being a shining light for British manufacturing, is rather buoying.

Page 39 sees Charlotte Cunningham reveal the results of our latest oilseed rape survey with LSPB. We find out where growers believe the crop is growing and perceptions of current challenges. After all, is it better the devil you know?

For this month's Insider's Views, Melanie focuses on LG Armada (page 45) and SY Buzzard (page 53) to see why they're piquing interest. She's also written two preview articles for the Cereals Event which you can find on pages 59 and 66. If you're heading to the show, we'll see you there.

Two articles which I really enjoyed reading and that continue on the Best of British theme were Melanie's trip to Claas' UK headquarters (page 69) and Martin Rickatson's visit to New Holland's Basildon factory (page 76). It's encouraging to read about companies investing in the UK and bringing through new talent.

Admittedly, there's a lot of late blight coverage in this issue but it's undoubtedly a testing time for potato growers at the moment and the threats keep on coming. We help to conduct a Roundtable on page 84 and then Mike Abram continues the conversation from different perspectives on page 88.

Thank you for reading the magazine, don't be afraid to get in touch with feedback or ideas for content. If I worked in a conventional office, I'd say my door is always open.

Speak soon,

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smith's soapbox

by Guy Smith

No mow May

There's a hint of irony in the fact that just as 'no mow May' becomes the height of fashion among the Chelsea Flower Show set, arable farmers across the land will be out more than ever during the month to mow the blackgrass out of various sustainable farming incentive (SFI) options.

I have reservations about both practices.

For starters, I put the 'no mow May' concept in the same bracket of foolery as the notion of 'wild gardening', which is also currying increasing favour with the chattering classes. In truth, it's just a contrived excuse to get out of gardening duties, the benefits of which might be good for sofa-surfing but are probably bad for the garden.

Maybe to illustrate the pros and cons here, the ground staff at Wembley Stadium should put their mowers away for May. It would certainly change the style of football at the FA Cup final as the likes of Harland and Foden hoofed around in ankle-length grass.

As for the frantic arable farmers mowing blackgrass in May to stop it from seeding, it makes spraying the stuff with glyphosate seem eminently more sensible for a number of reasons. For one, a spray of glyphosate would be infinitely better for ground nesting birds such as skylarks and lapwings.

Secondly, it'd use less carbon in the form of diesel. Thirdly, it would do a better job in controlling blackgrass because mowing the stuff just seems to encourage it to produce more tillers and seeds.

And lastly, but by no means least, it would be much cheaper. I remember back in the '90s there was some work done with low rates of glyphosate on set-aside — the idea was to suppress grassweeds without actually killing them. Maybe now is the time to revisit some of that forgotten 30-year-old work?

But currently, we're bound by the rules that prohibits glyphosate so consequently we're out with the mower on our AB15 for the second time in this merry month. Whether we'll be pushed to a third cut in our attempt to finally stop blackgrass from raising its ugly head remains to be seen. Of course, one's mindful of the old farming lore that would warn the farmer that one year's seeding would lead to seven years weeding.

Meanwhile, back on the food production side of the farm, the winter wheat still hasn't really recovered from the wet winter. Due to large areas of water-logging, growth stages are all over the place making fungicide timings somewhat random depending on which part of the field you're in.

As for the spring crops, thanks to some direct drilling, the peas have grown away well while the linseed and sugar beet behind the plough have had a more chequered start.

We spent the first half of April out with the cultivators trying to dry the land out and the second half of the month getting anxious about seeds needing a soak to get them going. Mercifully a 20mm on the last weekend in April finally got everything up and running.

So I'll leave you to your May frolics among the May bushes and May poles. As a philosopher once wrote: "In May, everything seems possible."

Glyphosate would be infinitely better for ground nesting birds such as skylarks and lapwings.

Guy Smith grows 500ha of combinable crops on the north east Essex coast, namely St. Osyth Marsh — officially the driest spot in the British Isles. Despite spurious claims from others that their farms are actually drier, he points out that his farm is in the Guinness Book of Records, whereas others aren't. End of.

@essexpeasant

Looking out for lodging

Spring agronomy

As the wet weather continues well into the spring, experts say managing lodging in spring barley should be a priority this season. *CPM* found out more in a recent webinar.

By Charlotte Cunningham

In what has been a difficult season, squeezing every bit of yield potential out of crops will be vital to compensate for some of the losses which will have undoubtedly occurred.

For spring barley in particular, planted area is likely to be down, with some of the key challenges for the crop the topic of discussion in a recent webinar hosted by BASF.

"We're all well aware of the unprecedented situation we find ourselves in this year. As of the end of April, wherever you are in the country, there's very little spring barley in the ground," says David Leahy, business development manager at BASF.

As such, David says that during the coming weeks it'll be vital for growers and agronomists to home in on what can be done to maximise yields in what's turning out to be a more condensed season than anyone envisaged.

Back to basics

He believes this can be done by getting the basics right. This includes variety selection and management; establishment technique; drilling date and seeding rates; crop nutrition and nitrogen timings; crop protection and spray timings; and PGR choice and timing.

Looking specifically at PGRs, late applications can predispose crops to ramularia, but getting on early can suppress apical dominance allowing crops to maximise tiller numbers which will be vital for yield this spring," says David.

"From a winter barley perspective, PGR applications have proved difficult to say the least during the past few weeks. A lot of those earlier applications were missed and now we're looking at applications to winter barley not going on until GS33 onwards, purely due to the fact growers haven't had the opportunity to travel."

So why is this a concern? David says rooting and shooting could become an issue in winter barley — particularly if a drought period sets in, as seen in previous seasons.

But for the spring barley that has been established, lodging should be a primary concern, explains ADAS' Pete Berry. "My observation in recent years is that ▸

> *"Spring barley is one of the worst culprits for lodging"*

Getting the basis right is the best way to get the most out of barley this spring, says David Leahy.

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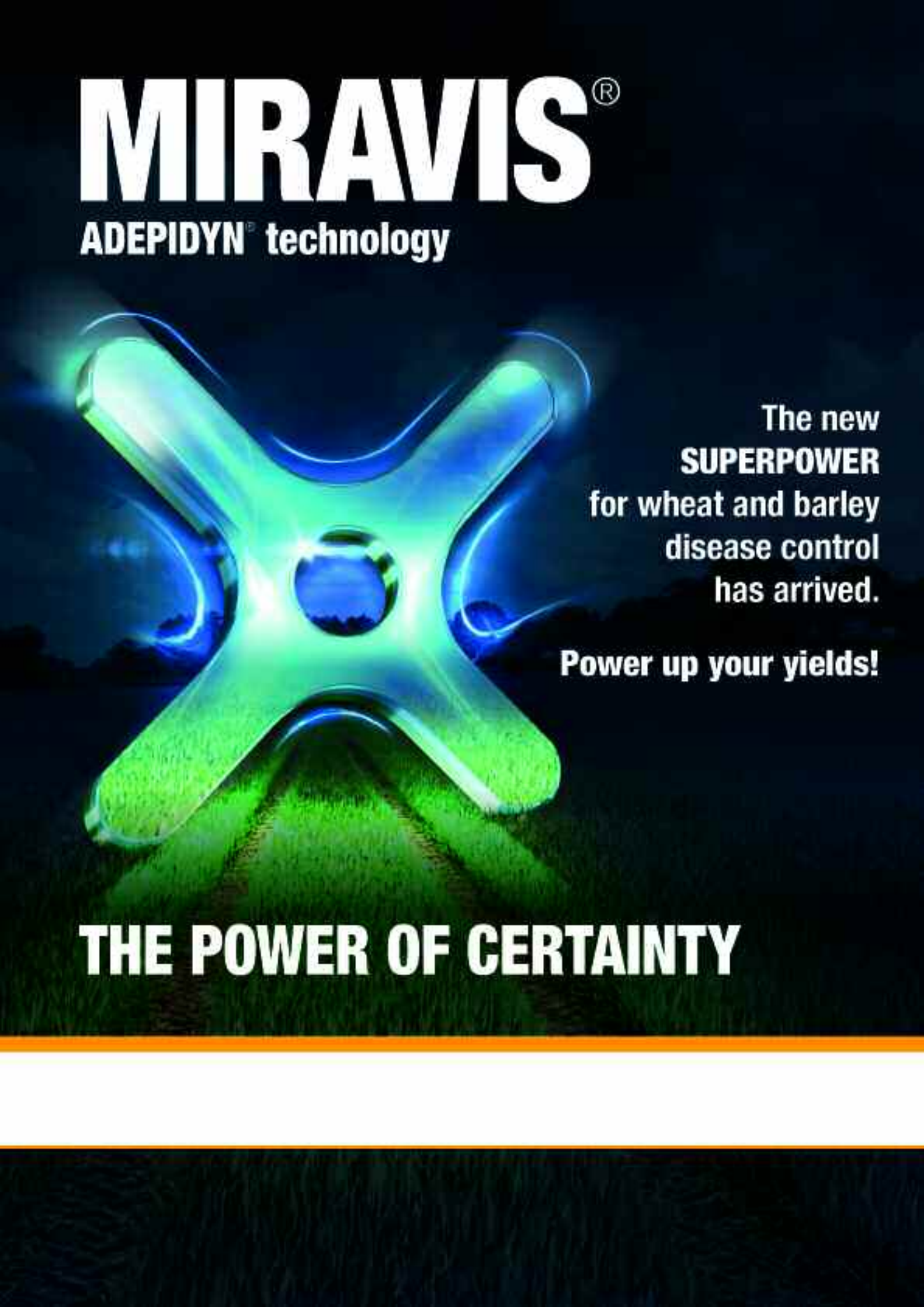

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Dr Aoife O' Driscoll
Senior Specialist, NIAB

"It's shown very good activity against *Septoria*. There can be a big gap between T2 and T3 or between T2 and harvest. If you've got an eight week gap you need a lot of protection. ADEPIDYN® technology at T2 fits that well. But it's also got other useful properties. A T2 application has given around a 50% decrease in *Fusarium* on the ear."

Adam Christie
Managing Director,
Scottish Agronomy Ltd

"We've been testing ADEPIDYN® technology for at least six years. Its efficacy has been consistent. It's the consistency that's the key.

On *Ramularia* and *Rhynchosporium* it's outstanding. In barley, we've seen yield increases in the absence of disease."

Jonathan Blake
Technical Director,
Crop Protection, ADAS

"In a high pressure trial in Herefordshire in 2019, when we flew a drone in mid-July, the only green plots were ADEPIDYN® technology. It was a clear step change in activity. The total fungicide yield response over the untreated was 3.75 t/ha, and the ADEPIDYN® technology based treatments outyielded competitor programmes by over 1.0 t/ha."

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syngenta.

For the spring barley that has been established this season, lodging should be a primary concern, explains Pete Berry.

▸ spring barley is one of the worst culprits for lodging. I think there's lots of attention put on winter wheat and winter barley. But spring barley often gets forgotten about and it's had a lot of lodging in recent years."

Pete believes that one of the key reasons for this is varietal weaknesses, with 12 out of the 18 spring barley varieties on the Recommended List scoring 7 or less.

As well as this, he says lodging has increased as a result of trying to increase barley yields. "For example, increasing the seed rate, earlier and greater amounts of nitrogen applied — they're all pushing up the lodging risk as well as increasing yield. The challenge with this is that lodging is often not fully recognised for the severity of yield losses that could occur as a result."

Looking at the figures, Pete says severe lodging which occurs early on — around flowering — has the potential to reduce yields by up to 50%. At the other end of the timescale, later occurring brackling has shown to reduce yields by as much as 1.4t/ha in ADAS trials. "Lodging is also likely to mean a greater drying requirement, so you then have the costs associated with that."

To tackle lodging effectively, it's firstly important to understand how it occurs, continues Pete. "There are two main types of lodging — root and stem. It's often perceived that for barley, stem lodging is the bigger issue, but that's not really the case.

"If you go out and look at lodged crops, particularly crops that lodge early, then root lodging is often the main cause and you only require several millimetres of rain to wet up the soil enough to weaken it so that this occurs."

Stem lodging

As the crop moves through the season and matures, stem lodging becomes more likely because the strength of the stem essentially halves between flowering and harvest. "So while stem lodging becomes more possible, root lodging is the one that's going to cause bigger yield losses."

ADAS has carried out a number of experiments to understand lodging and how crop management factors impact on the different types, specifically seed rate, nitrogen rate and PGR applications.

While decreasing seed rate and nitrogen rate were both proven to increase varietal lodging resistance scores, trials showed a single PGR application had one of the largest impacts. "From what we've seen, it could increase the lodging resistance score by anything between 1 and 2.5 points — for both root and stem lodging."

Alongside this, the timing of nitrogen applications is likely to have an impact. "We've found that if you put on all of the N in the seedbed, and you already have quite high soil residual levels, then that will increase the lodging risk. So shifting some of the nitrogen from the seedbed to a bit later, after the crop has started to emerge and during early tillering, can help to reduce the lodging risk.

"This season, with all of the rain, soil residual N levels are quite low so I think risk is less this year. But it's still something to watch out for."

To get the best effect from PGRs Pete

ADAS trials have found that a single application of PGR can have a significant impact on lodging.

advises mixing actives and splitting applications where possible. "Now clearly for barley, splitting applications is often a challenge and will be even more so this season because the crop is going to race through its growth stages and have a short window for applications.

"In all honesty, it might not be possible to apply more than one PGR this season, so it's vital to ensure what is applied is done so at the right time."

Pete says that brackling should also be on growers' minds, despite it often being overlooked and with a limited amount of work done on the effects it can have on spring barley yields.

However, ADAS has undertaken a number of trials looking at just this. "We ran a trial in a 2019 crop which had a decent amount of brackling in it, assessing the amount of brackling at the end of July and the end of August."

Yield losses

"We found that greater amounts of brackling resulted in bigger yield losses and in fact were able to conclude that for every 10% increase in the area of crop brackled, yield was reduced by between 0.11-0.14t/ha."

The trial also looked at the best methods of controlling brackling and found that applying BASF's Medax Max (prohexadione+ trinexapac-ethyl) or Terpal (2-chlroeth/phosphonic acid+ mepiquat chloride) substantially reduced the brackled area and as a result led to yield increases, he adds.

"It's going to be a challenging season, but I think the key take homes are to recognise the severity of yield loss that can occur if you get early lodging and minimise that risk from the get-go through variety choice.

"Also think about avoiding an excessively high seed rate, and where appropriate, you might consider delaying some of the seed bed N until early tillering.

"PGRs can be maximised by mixing actives and splitting applications if you can, which will also help to improve the efficacy of these tools in what's looking to be a testing few weeks and months ahead." ■

BASF launches new barley agronomy guide

To help growers and agronomists to look at the crop in a more intimate way, BASF has launched a new barley guide. David says it's been designed to be a one stop shop for information on everything from establishment methods to disease control and PGR choices.

"This isn't just for the 2024 season, it's something which is for the future — we've covered everything from the day you put the seed in the ground to the day you go to spray that crop."

To cover all UK perspectives, the *Barley Agronomy Guide* has been written in collaboration with Teagasc, ADAS, SRUC and NIAB, he adds. "It's something we're very proud of within BASF; to have so many industry experts contributing to such a valuable publication we're hopeful the industry will respond well to it over the coming weeks and months."

The guide is now live and can be accessed online through the BASF website.

The promise of certainty

> *“For the grower, this means both visible results and tangible yield uplifts.”*

Miravis launch

The latest in a line of new UK fungicide launches, Miravis Plus, which features the long-awaited Adepidyn technology, is finally here. *CPM* learns why it’s hailed as a step-change in disease control.

By Janine Adamson

The last time *CPM* explored fungicide technology Adepidyn was back in July 2021. And now, nearly three years later, the product has finally landed in the form of Miravis Plus.

Syngenta admits that hopes were high for the chemistry being available before this season, but nevertheless, initial demand following its authorisation in early April would suggest growers believe it’s been worth the wait.

But why the fuss? Firstly, Adepidyn is the trademark for active ingredient pydiflumetofen, which belongs to a new group within the class of SDHI fungicides (the N-methoxy-(phenyl-ethyl)-pyrazole-carboxamide group).

And because the chemical structure of the Adepidyn molecule is different from other SDHIs, trials have confirmed it can offer greater potency against a broad spectrum of diseases while delivering considerable yield uplifts.

Syngenta’s Lizzie Carr-Archer explains that although Adepidyn is registered in 50 countries across a variety of crops, it’ll be available in the UK market for use in cereals as Miravis Plus. “We’re marketing the concept as a co-pack, so it’ll be presented as Miravis Plus with Era (prothioconazole).

“Miravis Plus is ideally suited for T2 use in wheat and barley at one application per crop (see table), and we’re delighted to have a label with no restrictions including buffer zones,” she says.

Mode of action

The chemistry behind Miravis Plus works by adhering to the plant and penetrating rapidly through the leaf surface. This creates a reservoir of active ingredient in the waxy layer of the plant tissue to enable even distribution and long lasting protection.

Syngenta’s Jason Tatnell says the result is a step-change in the control of diseases such as septoria in wheat and net blotch in barley. “However, another jewel in the crown is its control of fusarium, which is unique within the SDHI class.”

Furthermore, the company is using three key words to describe the fungicide in its launch communications — superpower, stamina and certainty — all which Jason says contribute to yield.

In terms of ‘superpower’, he explains this is related to the product’s potency. “Based on EC50 scores [the concentration (or dose) effective in producing 50% of the maximal response], you require less Miravis Plus to achieve the desired results in septoria control, compared with the first and second generation of SDHIs. In fact, it offers a 100-fold increase in potency in these tests which we view as a true step-change,” says Jason.

“As for ramularia, which has proven very ▸

Miravis Plus with Era is ideally suited for T2 use in wheat and barley at one application per crop, says Lizzie Carr-Archer.

Recommended rates	Miravis Plus (pydiflumetofen) + Era (prothioconazole)
Winter wheat T2	1.5-2.0 l/ha + 0.5-0.67 l/ha
Winter barley T2	1.33-1.5 l/ha + 0.44-0.5 l/ha
Spring cereals T2	1.33 l/ha + 0.44 l/ha
	To be used together, one application per crop

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Less Miravis Plus is required to achieve desired results in septoria control, compared with the first and second generation of SDHIs, says Jason Tatnell.

▸ difficult to control since the loss of chlorothalonil (CTL), Miravis Plus offers very good activity — again 100 times more potent than comparable SDHIs (bixafen and fluxapyroxad), seen in similar lab tests.

"If you take this to the field across two leading barley varieties, there's a visible difference in ramularia control. The plots sprayed with Miravis Plus with Era at T2 after no T1 are much cleaner and greener; it's a great new partner to the multi-site folpet."

Jason also commends Miravis Plus' control of brown rust in wheat and net blotch and rhynchosporium in barley, offering all-round broad-spectrum activity.

But even more compelling is the product's 'stamina', he says. "Despite being applied at T2, Miravis Plus accumulates in the plant even until T3 for long-lasting protection. This has been demonstrated during a pot test where product concentration in the flag leaf was sampled."

Increasing concentration

"The application of Miravis Plus was made to leaf two just before the flag leaf had emerged. Plants were then grown on with samples taken at 14 days and 28 days. The results show that the product concentration within the flag leaf continued to increase during this time, demonstrating the active's movement to new growth," explains Jason.

Then, from an in-field perspective, green leaf area measurements further support the concept that Miravis Plus has endurance. "Research has shown that for every day from crop flowering onwards that green leaf area is kept at 37% or above, wheat yield can accumulate by 0.15t/ha.

"So looking at the time in day degrees that it takes for the flag leaf to degrade to 37.5% green leaf area, Miravis Plus with Era took the longest in ADAS trials, compared with other leading fungicide options," points out Jason. "For the grower, this means both visible results and tangible yield uplifts."

This stamina of the product over time is likely to be the reason why Miravis Plus is delivering on fusarium head blight control, he adds, which is unique within the SDHI group of fungicides.

"We acknowledge that T3 is the best timing to control fusarium, but by using Miravis Plus at T2 you minimise risk later down the line. In fact, research conducted by Harper Adams University has shown that an application of Miravis Plus with Era at T2 makes it more likely that a T3 of prothioconazole will keep a crop below the DON thresholds (currently 1250ppb).

"This is a 'free kick' into fusarium control and increases the success rate of an overall fusarium strategy," says Jason.

Disease control aside, what about the aforementioned promised yield uplifts — the reasoning behind the 'certainty' descriptor? Across all wheat trials at like for like doses, Miravis Plus with Era offers a 0.3t/ha uplift on fenpicoxamid+ prothioconazole and a 0.5t/ha uplift over mefentrifluconazole+ fluxapyroxad.

Focusing on one trial in particular, across the average of three high septoria sites in 2023, Miravis Plus 1.33 l/ha with Era 0.44 l/ha offered a 1.69t/ha advantage over the control (all crops received a standard T1). Compared with fenpicoxamid+ prothioconazole it delivered +0.31t/ha, whereas with mefentrifluconazole+ fluxapyroxad it was +0.54t/ha.

However, Jason says the yield benefits in barley are even more exciting. "Again, averaging all 122 barley trials undertaken from 2020-23, for all diseases at all levels, Miravis Plus with Era delivers a 0.5t/ha ▸

An independent perspective

According to NIAB's Dr Aoife O'Driscoll, it's difficult to identify any negatives about the Miravis Plus (pydiflumetofen) with Era (prothioconazole) product offering.

"Performance-wise, Miravis Plus' only weakness is potentially brown rust, but other actives can plug that gap," she says. "For T2, the best chemistry available is undoubtedly the two SDHIs Miravis Plus and Iblon/isoflucypram, or, Inatreq/fenpicoxamid."

Aoife says because Miravis Plus sits in a sub-class of the SDHI group, it's a useful resistance management tool. "With the plethora of chemistry now available, there's no reason to not mix and alternate modes of action across a fungicide programme. Ideally, we want to protect the chemistry for 10-15 years rather than the 3-5 year cycle we've been seeing during recent times.

"Key to this will be effective use of the co-pack — prothioconazole is a good mix partner which can be supported by folpet if resistance status warrants it. But definitely avoid mixing with another SDHI and certainly don't split the co-pack," she warns.

Her advice is due to the pace in resistance shifts across the SDHI group of fungicides — mutations seem to occur much quicker than in azoles, for example. "As with the other recently launched SDHIs, this makes Miravis Plus high risk resistance-wise," says Aoife.

She agrees with Syngenta in that Miravis Plus with Era is a positive launch for the industry and admits that in terms of persistency, it does stand out above the rest. "In NIAB trials we've seen good kick-back activity for 4-7 days against septoria and yellow rust which is another bonus.

"It also offers strengths in barley and is comparable or significantly better than other available SDHIs in the control of ramularia. This is especially useful for those who've been grappling with resistant ramularia strains and could be a game changer in those instances."

Dr Aoife O'Driscoll says avoid mixing Miravis Plus with Era with another SDHI and certainly don't split the co-pack.

Aoife also commends the fungicide's activity against fusarium in wheat. "It's proven to bolster the efficacy of T3 products which will be especially important when milling premiums are as high as they are," concludes Aoife.


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Managing ramularia in barley

SRUC's Neil Havis says in high-pressure ramularia trials, Miravis Plus-treated plots cause people to stop in their tracks, in a good way.

"With the loss of chlorothalonil (CTL), Revystar XE (mefentrifluconazole+ fluxapyroxad) is the most effective alternative for ramularia control. However, there are limits on the product's application date with a cut-off of GS45 in malting barley which can be too early. And if you miss that window, that's it.

"Miravis Plus offers a much-welcomed alternative with greater flexibility," he adds. "It's impressed the host farmer in our trials which says a lot."

Professor Fiona Burnett agrees that over the duration of a career in plant pathology, there might be two or three actives that stand out and this is one. "It's been genuinely exciting to see in trials, however, this year is difficult with limited spring barley in the ground due to inclement weather.

"So it will all depend on how much growers want to spend on a crop this season, and at the moment, we really don't know," she says.

Both stress the importance of resistance management to help prolong the life cycle of Miravis Plus. "Ramularia is a disease which mutates quickly with other SDHIs breaking down around 2017," says Neil. "We've lacked good fungicidal activity for some years, so a robust resistance management strategy will be key."

Fiona believes only being able to use the product once in a season will help. "And like Univoq, (fenpicoxamid+ prothioconazole) this is clearly stated on the label.

"Otherwise, using the lowest effective dose is helpful in reducing the risk of resistance — so don't use any more of the active than is necessary, while keeping up the dose of Era (prothioconazole). Equally, bolstering with multi-site folpet does offer a small benefit in terms of stewardship," explains Fiona.

According to Professor Fiona Burnett, over the duration of a career in plant pathology there might be two or three actives that stand out and this is one.

Trials have also shown that pairing with folpet can further improve ramularia control in particular, concludes Neil.

▸ uplift compared with mefentrifluconazole+ fluxapyroxad.

"And for our in-house barley trials across 20 sites, the yield uplift was +1.73t/ha over untreated, +0.53 over mefentrifluconazole+ fluxapyroxad and +0.4t/ha over bixafen+ fluopyram+ prothioconazole. Overall, the co-pack seems to deliver 0.5t/ha compared with the competition," he comments.

But Jason believes there's more to certainty than just yield, and that Miravis Plus offers a host of wider benefits to address the uncertainties of farming life. "This new launch offers the expected level of excellence from Syngenta formulations which results in a reliable cereals-safe product.

"Furthermore, we have a wealth of sprayer performance data which has become increasingly important of late. We're also assured of Miravis Plus' performance on disease resistance varieties — and that it delivers the same results in those scenarios," he stresses.

"And it's worth noting that SDHIs continue to deliver when there are weather extremes, particularly in hot and dry conditions which we've historically experienced during the spring."

Finally, for those seeking malting premiums, the BBPA (British Beer and Pub Association)'s agrochemical list now includes pydiflumetofen (Adepidyn).

So for a product which offers so much, will it become the number one choice for growers? Lizzie says demand appears to already be there with a surge in website activity since the product's authorisation was announced. "We're also working to achieve registration for alternative formulations under the Miravis brand family to cater for other crops," she adds.

But with a range of recently launched fungicide options available at varying price points, only time will tell. ■

Agronomic point of view

In terms of septoria control, used properly and at the correct dose rate, Miravis Plus with Era should provide excellent results, says head of integrated crop technologies at Agrii, Dr Ruth Mann.

"Agrii has been trialling pydiflumetofen/Adepidyn in some form since 2019 and it's continually come out on top. A stand out is certainly its activity on septoria — it has the potential to be amazing," she continues.

For balance, Ruth believes the product's control of yellow rust is more average and that mixing with other actives will be required to compensate for this if the situation demands, such as tebuconazole.

As for what some might see as the elephant in the room, she stresses that because it's a quality, potent product and has been priced accordingly, growers should avoid the temptation to cut rates below effective doses.

"It's premium and is admittedly expensive. But dropping the dose rates below the optimum level to improve affordability wouldn't be wise — I'd be worried about the efficacy and risk of resistance in that instance.

"However, other fungicide options remain which offer good disease control, rather than opting for Miravis Plus with Era and going against stewardship guidance," says Ruth.

"This is a very difficult year for everyone and input spend is pinched, but remember next season could be wholly different. Being realistic in decision making is vital," she concludes.

Dropping dose rates below the optimum level to improve affordability wouldn't be wise, stresses Dr Ruth Mann.

Widening the window for weed control

Sustainable weed control

Results from the second year of trials using a novel technology to control weeds at harvest has proven to reduce grassweed levels by up to 70%. *CPM* finds out more.

By Charlotte Cunningham

Following success in 2022, a farmer-led project has once again proven the value of controlling yield-robbing weeds at harvest.

The Harvest Weed Seed Control (HWSC) project, led by the British On Farm Innovation Network (BOFIN) in collaboration with NIAB, is based around the Redekop Seed Control Unit (SCU) which can be retro-fitted to combines and is claimed to destroy 98% of the weed seed that passes through.

BOFIN founder and Oxfordshire farmer, Tom Allen-Stevens, talked through the latest results in a recent webinar. "We've been looking at harvest weed control in three specific weeds — meadow brome, Italian ryegrass and blackgrass. We know that 98% of the seed that passes through the SCU is controlled — but what we don't know is how much seed is going in at the front of the combine."

Tom says that's all down to how much seed shed there is before harvest, and so the second year of research has specifically looked to capture data on this, as well as continuing to explore the level of weed control that's possible on commercial farms.

To recap on the first year of research, headline results included 54% retention of blackgrass seed at Adam Driver's farm in Sussex, as well as 60% reduction in Italian ryegrass in winter barley and 44% reduction in spring barley at Ted Holmes' farm in Warwickshire. Results were inconclusive at Jake Freestone's Worcestershire farm.

The second year of research has included the original three farmers and the combine at NIAB's Hinxton site but has been strengthened by bringing in Lincolnshire farm manager Keith Challen who's fitted the SCU to his Fendt Ideal 10.

Clear potential

Building on work that Will Smith carried out in the previous year, John Cussans has headed up NIAB's analysis for the most recent year of trials. He says the potential to fit the SCU to a wide range of combines is clear and the key observation was of a positive, trouble-free user experience.

This positive experience is despite farmers reporting increased fuel usage and engine load when the seed mill was engaged — something which was measured directly on the combine at the NIAB site. "We came up with a figure which was very reproducible and by using the telemetry from our combine we calculated the average increased fuel usage to be around 10%," explains John.

While he says that this is something which should be taken into account, John believes this isn't a significant enough figure to 'colour your opinion' on the value of the technology as a whole and will vary depending on the individual combine.

Turning focus to the research itself, John explains the work has not been focused on proving the efficacy of the SCU, but has instead looked at the level of control that's possible within the harvest window. "We work on the safe assumption that the seed mill itself is incredibly effective. Almost all weed seeds that go into the mill — we're talking more than 90% — are destroyed.

> *"It's a completely different paradigm for weed control."*

"We're not repeating work that's already ▸

Data captured by the farmer-led 'Seed Scout' network has proven that meadow brome has the highest seed retention in the ear at harvest, explains Tom Allen-Stevens.

The Redekop SCU is claimed to destroy 98% of the weed seed that passes through it.

▸ been done in terms of the efficacy of the machine and there's no reason to think UK weed seeds are any different to Australia or America, where the technology has already been proven.

"Essentially, what we've done is go onto farms where the SCU was fitted to commercial combines and set up some static tramline strips where the seed mill was engaged and disengaged. This enabled repeatability and replication on a large field scale."

The research team carried out assessments on density of weeds/m^2 prior to the SCU being used in the fields in the summer of 2022 to provide a baseline figure, followed by further assessment post-harvest in 2022 and 2023, explains John. "The results showed an immediate improvement when the SCU was engaged, which resulted in statistically significant differences in weed seedling levels in the following crop."

That said, John says it's important to put this into context with the fact that even if the SCU enabled 100% control of seedlings, growers would still have some weed seedlings in the following crop due to seed-bank populations. "The proportion of seedlings in a crop from freshly shed seed compared with a long-term seed-bank really depends on the system — how much mixing of the soil is done by cultivations, rotational sequence etc.

"As the balance of fresh seeds compared with those in the seed-banks changed, we saw two things. Firstly, that where weed populations were high in a crop, a higher effectiveness of the seed mill was observed.

"Secondly, on fields where there was much less cultivation — and therefore less mixing of the seed-bank to bring up older seeds — again, this resulted better effectiveness of the SCU."

The second year of research showed estimated reductions in weed seedling density of an average of 5% for blackgrass, 40% for Italian ryegrass and up 70% for brome.

Practical translation

In terms of the figures and what this means practically on farm, John explains that seed mill effectiveness was estimated by averaging across all fields and all years where the weed species was observed at sufficient density. "This direct evaluation of effectiveness resulted in estimated reductions in weed seedling density of an average of 5% for blackgrass, 40% for Italian ryegrass and up 70% for brome — which included a mixture of meadow and sterile species.

"These values are performance over the whole system as measured by reduction in following crops — not seed mill efficacy — and are minimum values because they don't account for the seed-bank reservoir."

While further work and incorporating botanical expertise is likely to be required to better understand seed retention and maturity at harvest, John stresses that the results to date highlight the importance of controlling weeds at harvest, alongside existing practices. "This isn't a pseudo-herbicide. Harvest weed seed control — with a seed mill in this case — means capturing seeds which have survived a previous attempt to be controlled. It's a completely different paradigm for weed control.

John Cussans says the SCU technology could contribute significantly to making sustainable grassweed management a reality.

"If we take another cultural control like delaying drilling for a month, figures show an average of a 40% reduction in blackgrass or Italian ryegrass seed heads. So with the seed mill, we're talking about an equivalent level of control to a practice which has been the mainstay for weed control.

"This in theory means that growers who are already delaying drilling could potentially bolster control by adding an SCU in. But it also opens up the door to growers to challenge how they approach growing crops as a result of weed seed pressure.

"It could be the case in the future that they could change this — which in turn may benefit establishment or yield, for example — by incorporating a harvest weed seed control mechanism instead. As it stands, this technology could contribute significantly to making sustainable grassweed management a reality." ■

Seed Scout results

Having secured funding from Defra delivered through Innovate UK, the most recent year of research also enabled the team to recruit 'Seed Scouts' to collect data on how much weed seed is shed between full ear emergence and when the combine goes in. The reasoning for this was to use the results to hopefully strengthen the use of harvest weed seed control measures, such as the SCU, explains Tom.

A total of 12 farmers from across the country sent in 26 samples for analysis of the grassweed seed count, per head, at harvest. Looking at the averages, in terms of percentage of seed retention in the ear at harvest, the results were:

- Blackgrass – 20-25%
- Italian ryegrass – 40-50%
- Meadow brome – 50%
- Sterile brome – 40%
- Wild oats – 5%

(Sterile brome and wild oats based on small samples)

"Something important to note about this is that there was a large range in the number of seeds per head, with more than 200 seeds of blackgrass in some cases. But it seems that meadow brome is the 'best' at retaining its place."

While the data collected so far provides a useful starting point and is the biggest collection in the UK to date, Tom points out that more is required to be able to draw meaningful conclusions about seed retention at harvest.

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A new wave of control

Innovation Insight

As growers grapple for more sustainable weed control strategies, a long-term trial programme is focusing on optimising application timings for the weed – not the crop. *CPM* finds out more.

By Charlotte Cunningham

In a quest to find solutions for sustainable weed control, a long-term research programme is aiming to shed a light on how growers can better approach both chemical and cultural strategies in order to keep yield-robbing weeds at bay.

The Diverse Weed Programme was launched by NIAB in 2019 and is based at a 2ha site in Hinxton. It was set up as a dedicated platform to study long-term sustainable management of diverse broadleaf weed species through a series of trials, explains weed biology and management specialist John Cussans, who is heading up the research. "The whole point of it has been to shift the focus onto a more diverse range of weeds — particularly broadleaf weed management.

"As an industry, we tend to think of all weed management through the lens of controlling blackgrass and other key grassweeds. However, as we change the way we farm and make rotations more diverse, in turn that's also going to create a more varied weed situation to manage."

The site has been part of a broad arable rotation for a number of years, resulting in an incredibly rich seedbank — with about 32 species of weeds noted to date — presenting a unique opportunity to really push the boundaries of weed control, says John.

Technical understanding

"Through the various trials and research we're carrying out, we really have a chance to up our game in terms of technical understanding, biology of weeds, how they interact with different cultivation systems, rotations and crucially, we have to relearn some basic information about weed control — timings, weed size and conditions at application. This is something that I think has been slightly taken for granted over recent years," he adds.

To enable this back-to-basics approach, NIAB has partnered with Nufarm to carry out long-term trials which focus specifically on optimising timing applications for the weed, rather than the standard approach of spraying at certain crop development stages, explains the firm's Laurence Power. "The ethos behind the work is to show both farmers and agronomists just how important it is to apply the right product at the right time for the weed — not the crop," he explains.

"As an industry, we've become fixated on key crop timings for weed control — T1, T2 etc. However, this might not be the most effective window, so we're working with NIAB to find out exactly when that optimum timing is.

> *"We'll be able to start to have a conversation about how we can make truly informed, accurate decisions about the future of sustainable weed control."*

Laurence Power says the hope is that they'll have been able to build a set of data which will allow agronomists and farmers to make the best decisions when it comes to weed control.

The trials will focus on the optimum timing of applications for the weed – not the crop.

"Something we keep hearing a lot at the moment is that resistance is building in sulfonylureas — and there is — but actually, more often than not what's making this worse is poor application. As a result, we get poor weed control."

Delving deeper into how the trial is set up, a variety of Nufarm chemistry will be used across multiple winter wheat plots but applied at different timings to observe the impact on weed control.

In terms of the programme components, the trial will include the following combinations:

- 2.5 l/ha Isomec Ultra (dichlorprop-P+ MCPA+ mecoprop-P)
- 25g/ha Paramount Max (florasulam+ tribenuron-methyl)
- 42g/ha Ally Max SX (metsulfuron-methyl+ tribenuron-methyl)
- 25g/ha Paramount Max + 1.5 l/ha Isomec Ultra
- 25g/ha Paramount Max + 2 l/ha Isomec Ultra
- 2.5 l/ha Isomec Ultra + 20g/ha Paramount Max
- 2.5 l/ha Isomec Ultra + 25g/ha Paramount Max

The plan is to apply the treatments in 'waves' to each plot, with 80 days between the first and last treatment, explains Laurence.

As the trials are aimed at applying at the right time for the weed — not the crop — Laurence says visual assessments will be carried out pre-treatment, at treatment and post-treatment. "During these assessments we'll obviously be looking at control levels, but we're also going to be observing green biomass. The reason for this is that sometimes with sulfonylureas we see stunting, rather than killing of weeds, meaning it will remain there all season just as a smaller plant."

Looking at the progress to date, as Nufarm only took over the site in May last year, the trials are very much in their infancy.

However, the crop plots were drilled in the autumn, the protocols have been set and the first 'wave' of applications were applied on 6 March, explains Laurence. "This was a little later than planned due to the difficult weather conditions. But the good thing about that is it's reflective of what many growers have faced this year and so our results will be in line."

What's more, to strengthen this Laurence explains that the trials will be carried out over a number of years. "This is a five-year partnership, so we hope to be able to highlight the long-term opportunities associated with adapting weed control strategies."

To enable a good benchmark for comparison, the first year of trials will be focused on a standard approach. "We're using a standard, flat-fan nozzle and working at water volumes of 200 l/ha. Next year, the plan is to carry out the same trials again but with a different nozzle and working at reduced water rates.

"The beauty of the five-year trial is that we can add new elements in year-on-year, but having a good reference point for comparison is vital," he points out.

The various trials and research present an opportunity to "up our game" in terms of technical understanding, biology of weeds, how they interact with different cultivation systems, rotations, says John Cussans.

At the end of this time period, Laurence says the hope is that they'll have been able to build a set of data which will allow agronomists and farmers to make the best decisions when it comes to weed control.

John concludes: "The trial with Nufarm is just one important piece of the weed control puzzle. But once we understand more about the fundamentals of control, we can start to bring in other elements — like cultural methods and utilising new technologies. Eventually, we'll be able to start to have a conversation about how we can make truly informed, accurate decisions about the future of sustainable weed control in a changing production system." ■

As rotations get more diverse, broadleaf weed management could become an increasing concern.

Diverse weeds open day

For those interested in finding out more about the latest developments in the trials, including the Nufarm wave trials, NIAB is hosting an open day at the Hinxton site on 4 June 2024.

The day will feature crop plot tours and speakers, including John and Laurence, who will present an update on key topics including:

- Cultural control methods – an update to how cultivation and drilling date drives the population dynamics of broadleaf weeds
- Alternative control methods – looking to the future of weed management, there will be an opportunity to discover how mechanical control can be combined with innovative uses of herbicides to control broadleaf weeds
- Timing of spring herbicides – an opportunity to see the importance of application efficacy to maximise the effectiveness of herbicides
- Herbicide choices – at a site with such diversity in the weed spectrum is the perfect opportunity to discuss which products are most suitable when faced with certain species.

When? 4 June 2024 at 10am
Where? Lordship Farm, North End Road, Hinxton, Cambridgeshire CB10 1RE
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Innovation Insight

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Feeding the world

Grain marketing

Despite UK cereal cropping reported to be substantially down this season, growers are advised to not hold out for a price hike when it comes to marketing their grain. *CPM* finds out why.

By Janine Adamson

As with most things in life, there are two sides to every story. Where a layman might assume that because the UK's cropping area is down this year due to unprecedented weather conditions, it would fall short of domestic demand and thus generate higher price, anticipated global availability means generally speaking, grain is likely to be available.

So although the world's current grain requirements look to be adequately met, whether that be through import or export, it does mean from an on-farm selling perspective, considerable price increases are unlikely to take place.

That's the message from Openfield member services director, Richard Jenner, who says growers may have to become accustomed to values of around £180-190/t ex-farm, rather than the £300t/ha seen in 2022. "We went through a period of high prices but seem to have settled into a more even range now with smaller fluctuations.

"Remember that just because the UK crop may be tight this year doesn't mean prices will go up, the market doesn't work that way sadly. Grain consumers will look to imports to cover the lack of home-grown cereals," he says.

Global confidence

Cecilia Pryce, head of research, compliance and shipping at Openfield, agrees and says globally, the world has confidence there's enough wheat, barley and maize. "If all goes to plan, the same exporters of these key commodities will dictate the market.

"The UK is likely to be a net importer of cereals next year, but the question will be, which crops? There could be a requirement for cheap feed maize or it could be high quality milling wheat," she explains.

"It's all down to how much demand there is for production, bearing in mind the UK has over the years generated domestic demand to consume our domestic crops, be that through ethanol plants, starch manufacture, animal feed or the daily loaf of bread. It all creates regional pulls throughout the UK for cereals."

Furthermore, Cecilia highlights the

> *"Just because the UK crop may be tight this year doesn't mean prices will go up."*

Richard Jenner says growers may have to become accustomed to values of around £180-190/t ex-farm rather than the £300t/ha seen in 2022.

According to Cecilia Pryce, the world has confidence there's enough wheat, barley and maize.

volume of 2023's crop being carried forward into 2024's marketing. "There'll have to be a price equalisation between new and old crop. The two will eventually meet but this may not happen until new crops are cut and in the barn and the quality is known."

Richard says the large remaining stocks from last year could mean the market maintains its current 'benign' position. "It will certainly buffer the deficit in new crop. However, the biggest risk is to not sell anything at all, doing nothing isn't really a valid option," he stresses.

"The advice is to sell something if you haven't done so yet, bearing in mind current prices are at the upper end of what we've been seeing overall."

But will having to rely on imports leave the UK vulnerable to currently unforeseen geopolitical events? Cecilia says at the moment, there are no major global concerns just markers. "Unknowns can still happen and of course we could be subject to a weather market as we approach harvest which could add some volatility.

"Ultimately, Ukraine taught the markets a big lesson but now, ships are moving and most of their old crop is exported. There is currently a working logistics system in Ukraine so it's reduced some of the unknowns."

Logistics game

"As for the Middle East, only time will tell — they aren't perceived as major cereal players but we all require oil and safe passage for global shipping. Global grains is a logistics game, moving over supply to consumers in the most efficient way possible — any shocks and prices react," she adds.

AHDB senior analyst (cereals & oilseeds), Helen Plant, agrees that there appear to be no current significant watch-outs, although adverse weather and global events remain a risk. "Russian crops look healthy and conditions are ▸

Missing intel

A flaw in the grain marketing process, according to Cecilia Pryce, is a lack of timely data from Defra. She says without this, farmers aren't supported to navigate the grain markets with confidence and everyone is left in the dark.

"There has to be a better handle of what's in the ground and its quality. No one seems to be able to accurately report the crop size until post-harvest when it's in the barn," she says.

"Having this information quickly is vital to avoid the UK over importing or being caught short which is ultimately a food security issue."

Cecilia is also concerned about the impact of the Sustainable Farming Incentive (SFI). "That's a big watch-out — how many people are exiting farming and thus taking land out of food production."

The quality of the UK crop will dictate the balance between bread wheat and feed grain imports, says Helen Plant

▸ good for planting in Australia as they enter a new season. Although European conditions are concerning, globally that's not the case," she says.

According to Richard, global conflict often doesn't affect the market as much as might be expected. "Otherwise, any problems are unlikely to arise until June onwards when harvest starts for crops in the Northern Hemisphere. The influence of South American maize crops is a little down the line too, which are a current watch-out due to the weather."

Helen adds that although importing greater volumes does expose the UK to global volatility, it isn't the first time this has happened and the market is set up for it. "However, the quality of the UK crop will dictate the balance between bread wheat and feed grain imports. And at the moment, crop condition isn't great," she points out.

"It all depends on whether UK crops can recover at this point, with wheat having the most potential to bounce back. A practical approach will be necessary — considering input spend and planning ahead to aid cash flow."

Regardless of what's occurring globally, both Richard and Cecilia agree that farmers have to devise some form of grain marketing strategy. "Whereas Openfield wouldn't advocate large amounts of forward-selling, there are other tools such as trackers and pools which help to mitigate uncertainty," says Richard.

"It's all about an individual's attitude to risk, not dissimilar to committing to a mortgage on a property. Do you want consistency to aid cashflow management, or are you happy to operate within greater risk and track?

"It's also worth noting that having a plan relieves stress and pressure. If a farmer is marketing their own grain themselves, this requires constant attention. It can't be left for a week because when it does move, the market moves quickly," he stresses.

Preserving potential

As with every year, key to decision making will be understanding the cost of production versus yield potential. But according to Cecila, it's not just when the crop is in the ground. "1t/ha can make a lot of difference — yield is everything, similarly, a crop has to be looked after once it's in the silo. Farmers supply feed and food markets so grain must meet contractual and legislative requirements."

On the subject of quality, Helen notes milling wheat premiums remain high, if the specification can be met. "The market is offering incentives to grow milling wheat it's just whether it stacks up from an input spend perspective and if weather allows. Nitrogen prices have fallen quite significantly, which will help, although they are still above pre-Ukraine war levels," she says.

Cecilia reminds growers that everyone is in the same boat worldwide, broadly speaking. "It's a difficult time with challenging weather, relatively high input prices and environmental net zero targets. But we're all in this together — the world carries on and farmers globally all have challenges to overcome.

"The UK currently operates within a global market which either feeds us or takes our surplus. As long as transparent trade continues, we should be okay," she concludes. ■

World estimates

In its latest Grain Market Report (18 April 2024), the International Grains Council predicts that total production around the world will be 2322M tonnes next season (2024/25) — up 21.3M tonnes from last year. This is just above the projected demand level (2,331M tonnes).

AHDB senior analyst (cereals & oilseeds), Helen Plant says although stocks are relatively low overall, this won't be a factor unless there's a problem such as with the weather.

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Hutchinsons has made a substantial investment in its digital offering to provide an all-in-one farm management system which promises to deliver the goods for UK agriculture. *CPM* headed to London to hear more about the Omnia EasyPlan upgrade.

By Janine Adamson

Hutchinsons has been teasing that something big is coming and all was finally unveiled to the farming media in London at immersive art experience, Frameless. Afterall, the future is digital, well, almost.

And the reason behind the interactive, multi-sensory Van Gogh? Omnia is making a splash on the canvas in the form of the EasyPlan ugrade — promising to change the face of farm management software.

So where could be better to display the capabilities of this revamped digital farming tool than in a gallery which celebrates what’s possible in the technological landscape? That was the message from head of marketing, Nick Rainsley, as he welcomed the press to the experience which is located in Marble Arch.

The host room, which is conventionally used as one of the smaller galleries at Frameless, featured a full floor-to-ceiling presentation across three walls — echoing the immersive ethos of the venue.

More from less

So to set the scene, Hutchinsons managing director, Gordon McKechnie, explained that without the possibility of finding more land to farm, new ways to increase production while addressing environmental concerns had to be sought. “However, data gives the opportunity to meet this challenge of producing more from less,” he said.

“We’ve intentionally broadened Hutchinsons to support full UK farm-focused problem solving – this includes what we’ve done with data and the Omnia platform. Precision agriculture is the cornerstone of UK farming and enables tailoring down to a field and even sub-field level to minimise environmental impacts while maximising yields. Digital tools are a key part of this.”

Furthermore, Gordon highlighted that data is driving tangible improvements to environmental management — providing benefits which can help to mitigate climate change and aid biodiversity. “And it’s clear that as agriculture adopts the optimisation of data, the potential for improvements in food production are vast,” he stressed.

However historically speaking, there have been two key hurdles to overcome — using data responsibly and instilling trust, and, connectivity. Gordon said it was imperative that farmer concerns were addressed. “Farmers fear sharing data will make them vulnerable and divulge their competitive advantage so require assurance of responsible use; Hutchinsons takes this very seriously.

“There have also been issues related to the ability to transfer and share data. We’ve been working to overcome both of these hurdles through the Omnia upgrade,” he explained.

According to Gordon, the upgrade is

Data gives the opportunity to meet the challenge of producing more from less, said Gordon McKechnie.

game-changing and importantly, a British solution for British farming. He said the aim has been to produce a new style of farm management software which provides a suite of services. "It's more than a technology tool — this is a fundamental shift in agricultural practice to ensure productivity and sustainability gains," he added.

"Omnia with the EasyPlan upgrade gives the opportunity to unlock the power of data for the UK to proactively contribute to global food production issues."

To explain what's driven the upgrade, precision technology manager Oliver Wood took to the stage. He shared the story of Omnia so far from its launch in 2016 through to current day — now with 4000 users and 1.5M hectares managed.

As it stands, Omnia is available at three service levels — Omnia Access (£0), Omnia Field Manager (£3.15/ha) and Omnia Business Manager (£6/ha). These range from a free service for basic farm mapping (Omnia Access), through to full analysis of information for a range of variable input applications (Omnia Business Manager).

Oliver said Hutchinsons has this structure in place to accommodate for the size of each specific business and it allows for the scale of larger farms. "This is discussed individually with each farmer because grower requirements from Omnia can vary. But the platform is always under development — a process which we've undertaken from day one and will continue to do so. Listening to user feedback is an important factor for this," he said.

To illustrate this openness, videos from three farmer users were shared — Andrew Booth, Harry Horrell and David Hoyles. Although having individual thoughts on Omnia, all explained they wanted a one-stop shop for data which was easy to use.

Having reviewed this initial feedback, Oliver commented it was clear there was a gap in the market which Omnia has the function to address. "So we decided to do something about it," he said.

To glean further insight, Hutchinsons conducted both farmer and agronomist focus groups, as well as undertook a sprayer operator survey. The results indicated the potential to move Omnia into the farm management system space specifically for the UK.

But the true goal was to combine all four aspects of the current agricultural software market — telemetry, precision agriculture, decision support and farm management systems, said Oliver.

"Eight years of building up has come to this point — Omnia with the EasyPlan upgrade. It's a combination of new or heavily upgraded modules which allow users to easily create plans and records, manage stocks and choose who to share their data with; we want to solve the problems that our clients have," he continued.

Digitisation of agriculture

"We want to reduce the paperwork burden, support completing records on the move, have up-to-date records throughout the season, provide user-driven smart features, offer an easy-to-use digital solution, and ultimately, support the digitisation of UK agriculture," listed Oliver.

To follow, head of field-based IT, Lewis McKerrow, ran through the broad farm tasks which the upgrade aims to address and how Omnia has been revamped accordingly.

He said at the core is complete digital traceability. "But, we can still cater for those who prefer a physical PDF report — Omnia isn't exclusively digital. It can perform as a hybrid model if that's required by certain clients," he pointed out.

The first aspect which Lewis says the upgrade improves is crop inspections which is addressed through an extension of the current Omnia Scout iOS/android app.

Oliver Wood said the EasyPlan upgrade is a combination of new or heavily upgraded modules which allow users to easily create plans and records, manage stocks and choose who to share their data with.

"It's common to have to conduct crop inspections in some areas of agriculture. We expect this is likely to become more frequent in order to justify on-farm decision making for end-to-end traceability," continued Lewis.

"Before, such inspections could be ▸

A season for digital tools

Inclement weather since last autumn has presented growers across Lincolnshire and Leicestershire with a range of challenges as the season progresses.

The main issue is having to split crops into several different categories and from now on, it's going to be about paying attention to detail, says Sally Morris, agronomist and area business manager at Farmacy.

However despite the bad weather, Sally says there are many crops with potential which will have to be pushed to achieve their full yield potential.

"We've already been sensibly robust at T1 as septoria pressure is high in early or thick crops. Going forward, fungicide choice will be rain and forecast dependent, but will have to remain robust to protect the potential of the crop.

"Clearly, we're now at a stage where we can tell which crops can be pushed harder and those where we just have to accept that it's a case of doing what's essential — it's all about risk management."

She stresses that this year, more than ever, using Omnia will be beneficial to create notes and plans for patchy fields, allowing for utilisation of areas where there's greater potential.

Sally Morris stresses that this year more than ever, using Omnia will be beneficial.

Sally says she's seen a lot of early weed germination: "Competition has to be reduced as much as possible and spray out areas where there's no crop and blackgrass has taken over."

She believes leaf testing will be crucial as magnesium and manganese levels will have to be addressed. "I'm also a fan of biostimulants which are very good for reducing stress in crops, but in a year where we're being mindful of spend, this is a conversation to be had with individual farmers," she concludes.

According to Lewis McKerrow, the new Omnia spray module was the most requested function from agronomists and wider clients.

▸ held in the Omnia field diary, but it wasn't possible to record live operations or manage work orders as they happened. The new upgrade enables users to take photographs of the crop or problem on the fly, draw points on the site map, log issues and add comprehensive notes. All can see the details of these inspections to provide a full history for that crop," he explained.

Next, a considerable part of Omnia's development has been the spray module — a new feature within the platform which streamlines the creation of crop protection plans. Lewis said this was undoubtedly the most requested function from agronomists and wider clients.

"Admittedly, pesticide legislation makes this difficult and there's a lack of innovation within this area. So key to addressing this gap has been the development of Omnia Halo — a back-end pesticide database which operates behind the scenes.

"This takes core data from Fera which is then plugged into Halo. The system is automatically updated on a daily basis, but, is managed by human specialists for added governance and to enhance the provided data. This is what allows Omnia to successfully 'audit' crop protection plans," he added.

According to Lewis, because the data from Fera is both structured and unstructured, this makes it harder for a computer to interpret hence the specialist trained staff operating solely on Halo.

"The Halo team translates the unstructured data to ensure accuracy. All-in-all, there are 15 key compliance checks to ensure the legislation is correct and adhered to. Unlike other solutions currently available, this includes checking recommendations against previous plans and applications, and multi-year active loadings for chemistry such as metazachlor."

The spray module also has a tank mix sequence tool which can automatically sort and re-order products irrespective of how they were added to a recommendation. Finally, a tank mix calculator helps to identify exactly how much product is required based on the specific area being worked.

The next improvement is to on-farm tasks and record keeping, which Lewis says has been resolved through the new field diary module. "This was devised as a means of reducing the paperwork burden and to alleviate the disconnect between field and the farm."

Flexible levels

"Omnia now offers three levels of flexible record management (task manager, task and record) which can be used depending on the person involved and their level within the business. For example, a larger farming enterprise may employ a farm manager who oversees the delegation of tasks. In this instance, they would access full detail through the task manager tab," he explained.

Another significant addition is the stock module for improved stock control. Lewis stressed this is a common problem for many due to it being time consuming and inflexible. However with the upgrade, users can now create and manage orders, manage suppliers as required and track orders with automatic status updates.

"In terms of inventory updates, users can generate dedicated stores within the platform depending on product type (seed, chemical, fertiliser etc), and there's the facility to have multiple location options across a site. This is all automatically updated, there's a stock taking mode for auditing purposes, and it includes pricing with subsequent confidentiality controls," he said.

An added benefit for in-house customers is that the stock control module can be connected to Hutchinsons' ERP (enterprise resource planning) system for enhanced tracking, added Lewis.

The final farm task which the upgrade strives to streamline is crop performance, addressed through development of the existing Omnia business module. Lewis explained that farmer feedback had suggested crop performance was the most critical part of overall business management.

"This is available at both a whole and sub-field resolution including the generation

At the core of the Omnia EasyPlan upgrade is complete digital traceability, although printable PDF reports can still be produced if a hybrid approach is preferred.

of automatic CO_2e calculations. Per field map, users can see the net margin variance across the area for more precise decision making.

"They can also compare variable and fixed costs at a sub-field granular level with traffic light labelling from red to green. Of course these variable costs are updated as crop protection plans are inputted and completed," he said.

Omnia with the EasyPlan upgrade has been trialled by around 50 test users so far with Hutchinsons agronomists having access since this January, including the Halo pesticide database.

But aside from the shiny new practical features, what about initial concerns regarding the control, security and ownership of data? According to Lewis, this is all down to permissions, with a new function which allows farmers to manage visibility of the platform at an individual per-user basis.

Furthermore, Omnia is now independently governed through an ISO 27001 certification which demonstrates a business follows international best practice for information security management.

And, Hutchinsons is a founding member of the new not-for-profit 'Farm Data Principles' organisation which is chaired by Professor Tina Barsby. "Omnia is the first platform in the world that holds both of these accreditations," continued Lewis, "it's all part of building trust."

To conclude the event, the team openly discussed the price of the new offering which to many, might come as a surprise — the EasyPlan upgrade will be included within the existing Omnia service levels at no additional cost.

"The new functionality has been added to the existing packages accordingly; the structure of the business model won't change and there's no extra charge," said Lewis. "We're going live from 7 June with the first public demonstration taking place at Cereals Event on 11-12 June," he concluded. ■

Breaking down biostimulants

Biostimulants

The increase in biostimulants available on the market has given farmers and agronomists much more choice while delivering exciting new technology, however, the number of products on offer can be confusing. *CPM* investigates whether the market can be broken down to create clarity.

By Will Charlton

It's possible to classify biostimulants according to their mode of action, much like what's done with plant protection products. So could this help farmers better understand their benefits and build a mix-and-match programme according to their requirements?

The term biostimulant first emerged from scientists like Professor Patrick Du Jardin in the 1990s, says Francis Dodds, editorial director at Burleigh Dodds Science Publishing, which publishes a biostimulant guide edited by five experts: *Biostimulants for Sustainable Crop Production*.

"For a while, there were quite a lot of different terms used such as plant growth enhancers or plant probiotics," continues Francis. "Biostimulants are a broad and eclectic group of materials that have no obvious relationship with each other but can be defined as biostimulants because they perform the same functions."

Classification model

According to Francis, the mode of action is perhaps the easiest way for farmers to understand and classify them. He says these can be defined as improved nutrient use efficiency, tolerance to abiotic stress and resistance to biotic threats.

"Research suggests there are various mechanisms by which increased nutrient use efficiency occurs. One is root foraging which is the way particular biostimulants promote the growth of root hairs and root numbers by stimulating plant hormones that regulate their growth.

"This is what humic substances tend to do. You can see images of root hairs and once you add humic substances, you see dramatic improvements in root biomass," says Francis.

Biostimulants can potentially protect against abiotic stress in three different ways: defence primers reinforcing plant defences before stress, rescuers acting during stress, and restorers helping the plant to recover from stress.

"For example, seaweed extracts work through a hormonal priming mechanism which prepares plants better when stress occurs," comments Francis.

> *"Biostimulants are a broad and eclectic group of materials that have no obvious relationship with each other."*

He says biostimulants are used as primers to reinforce a plant's defences, rescuers during stress, and restorers to help a plant to recover from stress when protecting from abiotic threats.

"Microbial biostimulants, in particular plant growth-promoting rhizobacteria, can help to do this by competing with pathogens for nutrients in the soil; if they outcompete them, they suppress them. They also seem to generate antibiotic compounds as a defence mechanism themselves.

"Because they have such an extraordinary symbiotic relationship with the plant, they seem to be able to generate signalling peptides that stimulate the plant's resistance response to attack," explains Francis.

The laboratory and controlled environment studies that academics will typically use to identify and track modes of action are all very well, says Francis. However, these results don't always translate into the field.

He believes we're at the stage where ▸

Guy Peters sees a role for Encera in high yield potential crops where there's a benefit from additional nitrogen.

▸ more field trials and long-term commercial use of biostimulants are required to build up the evidence base for their use.

"In selecting a bioprotectant product, I would advise looking for products backed by a combination of laboratory and controlled-environment trials, as well as field studies. Ideally products should also be supported by independent trials," adds Francis.

Improved nutrient use efficiency

With AHDB international benchmarking indicating the UK has the highest nitrogen fertiliser costs per hectare of any country participating in the survey, it's unsurprising that many farmers are looking for solutions to improve nutrient use efficiency.

A range of biostimulants, also known as biofertilisers, now exist, claiming this as a mode of action. One of the latest to arrive in the UK market is Encera which has been brought to market by Azotic Technologies.

This was developed out of a research project at the University of Nottingham where scientists discovered how Gluconocetobacter diazotrophicus (Gd) colonises cells in sugar cane plants and then fixes nitrogen which it provides to the plant in exchange for sugars.

ProCam agronomist Guy Peters advises predominantly on mixed farms in Devon and west Dorset. Last season, he used Encera on maize crops, tank-mixing when spraying post-emergence herbicides.

Overall, he's been impressed with Encera with treated crops performing well. Guy has also found it to be compatible with herbicides without causing crop damage.

He explains that the RB209 guidelines for maize are more complicated than cereals, but in essence, the limit is 150kgN/ha on a soil nitrogen supply (SNS) index of 0. "It's not an exact science," he says.

"Every field gets a different amount of muck and slurry and winter rainfall will be variable. We also have to account for the field's history; how much muck and slurry has it had in the last ten years?

"Unlike cereals, we don't have a calculation to add extra nitrogen to account for predicted yields greater than 40t/ha. We believe maize crops with a yield potential approaching 70t/ha would benefit from higher nitrogen rates, so Encera fits nicely here by utilising nitrogen more effectively and not breaching RB209 recommendations. If in doubt, always consult with a FACTS-qualified agronomist," stresses Guy.

Anecdotal reports from agronomists on Encera's performance have been backed up by trials ProCam has conducted on maize in 2022 and 2023. When Encera was added to the farm standard nitrogen programme, which was farmyard manure, they found it increased both fresh and dry matter yield.

Encera returned consistent results across the two years by providing an additional 3.5% dry matter yield in both seasons. ProCam technical development manager Rob Adamson believes this shows how Encera is efficient and consistent in delivering nitrogen to the yield-forming components of the crop.

Tolerance to abiotic stress

Whether there's too much rainfall or not enough, overcoming abiotic stress is becoming an increasing priority for farmers due to climate change. To help crops to thrive in changeable conditions, many are turning to biostimulants with tolerance to abiotic stress as a mode of action.

"Optimising plant health from day one by using a proven biostimulant seed treatment to target seeds rather than treating plants, is the number one thing growers can do to achieve a more resilient start, both operationally and economically, and to protect genetic yield potential," explains Stuart Sutherland, technical manager at Interagro.

"Recent seasons have proven just how unpredictable the weather can be which limits everything from sowing to spraying. So by treating the seed, growers are able to take action before they even set foot in the field."

Among the offers on the market is Newton — a biostimulant seed treatment from Interagro which combines peptides that stimulate plants to thrive.

Andy Baird dressed all of his oats with Newton for the first time this season and despite a winter from hell, he says the whole 29ha field looks fantastically well.

"By managing the balance of growth-promoting hormones versus growth-inhibiting hormones, Newton triggers faster germination and emergence, signalling enhanced root and shoot growth, and plant defence systems.

"With proven abilities in the field, Newton not only ensures vigorous crop establishment, but it also helps to build stronger, healthier, more resilient plants that are less dependent on synthetic inputs," adds Stuart.

Embracing the benefits of Newton is third-generation farmer Andy Baird, managing partner at Kirkness Farm on the south side of Loch Leven. He farms 162ha of turf and arable with cropping down to winter oilseed rape, a winter oat seed crop for Alexander Harley Seeds, and high-nitrogen spring barley variety Soccer.

"We had all of our winter oats dressed with Newton for the first time this season and despite the winter from hell with horrific rainfall since October, and without any warmth, the whole 29ha field looks fantastically well," says Andy.

"The crop has rooted amazingly — the best I've ever seen in all the time we've been growing oats. It's thrived despite the difficult conditions with zero yellow patches in the field. So much so that my neighbours have commented on how well the crop looks.

"Farming is a cruel business if we get timings wrong and the crop doesn't perform as you'd expect. Well sown is half grown, and for me, Newton ticks this box," he explains.

Looking at the other crops in the rotation, local soils were just becoming ready for April spring barley sowing in the third week of the month.

"The sweet spot for drilling in Scotland is the first, second, and third week of April. We're starting the third week of April [at the ▸

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From what Antony Wade has seen, the disease control from Iodus is at least as good as other multi-sites available on the market.

▸ time of interview] and I know with absolute certainty that some spring barley crops in Scotland will be drilled in May, which we can get away with up here because of the longer day length compared with central England," adds Andy.

"The point is, time is running on, and pressure is on to get crops established well so for me, Newton is a no-brainer. Spring barley is only in the ground for 120 days so every day counts. Evidence shows Newton helps crops to emerge two days faster which is a vital benefit."

Andy believes the weather is his business partner. "Sometimes it's a great partner, but at other times it can really let you down. In farming, we have to be able to take risk out of the system and this is where Newton is a really valuable insurance. It gives peace of mind that you've done your best for the seed and establishing it in whatever circumstances present themselves."

Resistance to biotic threats

Recently, a new type of crop protection product has emerged. These are plant health elicitors which work by stimulating the plant's own defence mechanisms before an infection has taken place. Elicitors are biostimulants but are more commonly known as biopesticides – they improve resistance to biotic threats as their mode of action.

The most well-known elicitor is Iodus which contains laminarin. "Laminarin is a remarkable mix of polysaccharides extracted from brown algae," says Stuart Jackson, head of technical services at UPL UK. "It's the subject of much biomedical research as a candidate for cancer immunotherapy and its healing properties.

"In plants, it mimics the degraded cellular material released from a fungal attack which activates nearby cells' defence systems. Applying Iodus before a fungal pathogen attacks the plant prepares it for when an actual infection occurs."

A growing number of agronomists are using Iodus at T0 and this is especially true in the West of England where the septoria pressure tends to be higher than in other parts of the country. Antony Wade, Agrovista technical manager for the West, has been using it for several years.

"I've tended to use it at T0 on my stronger varieties for disease resistance, such as KWS Extase, KWS Palladium, LG Typhoon and Champion," says Antony. "These varieties don't tend to have other disease worries (like yellow rust); we're using it to support the disease resistance of the variety.

"Where to use Iodus, depending on the variety, is a topic of conversation. I know from talking to other agronomists that some of them have taken a different approach and are using it on their weaker varieties; we're still getting to know how to use the product.

"From what I've seen, the disease control from Iodus is at least as good as the other multi-sites available on the market."

T0 comes at a time when farmers could also be looking to apply herbicides, trace elements and plant growth regulators. Although big tank mixes at this time aren't recommended, the situation can force the hand of farmers, so tank mix compatibility and a formulation that is delicate with the crop are important.

"If you have to do spring grassweed control, it's one of the products that you can include with mesosulfuron herbicides like Horus (mesosulfuron+ iodosulfuron). It's a relatively benign product, so I wouldn't expect it to cause an issue, which is another benefit of it in the T0 slot," concludes Antony.

Combining modes of action

Combining multiple modes of action in a programmed approach to aid the crop in different conditions is the next step for many advocates of biostimulants.

Russell McKenzie farms 160ha in Cambridgeshire alongside a consultancy business and has evolved his approach to biostimulants during the years. He uses his understanding of their mode of action to mix and match his approach according to the situation his crops face.

"Going back to 2012, we had a situation where roots were sat in waterlogged soils, carbohydrates were stuck in the stems, and crops ended up with green stems at harvest and dead ears," says Russell.

"Now there's a better choice of

Russell McKenzie uses his understanding of a biostimulant's mode of action to mix and match his approach according to the situation his crops face.

[biostimulant] products and you start thinking about what we could do if that situation repeats itself. There's a massive toolkit to decide what to use where.

"The challenging seasons mean you begin to build up a library of ideas about how to combat crop stress and situations that will restrict yield."

According to Russell, the biggest hurdle to overcome has been figuring out how biostimulants work and where to place them. He tends to target their use on wheat early in the spring at growth stages 30 and 31, and later, around flowering and grain fill. This way, he can influence biomass levels and grain size.

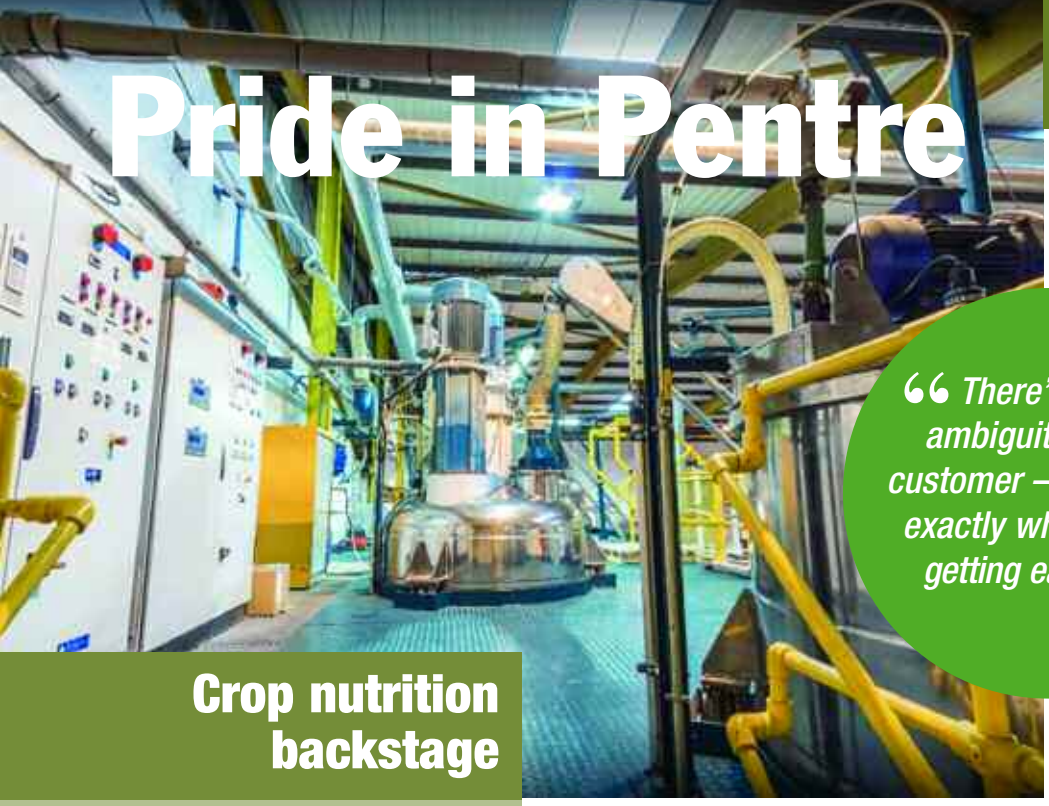
"Last season, we had a really good result with Luxor alone to boost phosphate assimilation. However this year, we used a half rate of Luxor and Calfite Extra because we wanted to encourage the roots, considering the wet weather," adds Russell.

Luxor and Calfite Extra are sold by Unium Bioscience with both increasing nutrient use efficiency. Calfite Extra is a phosphite-based product which promotes root development and phosphate utilisation whereas Luxor is a blend of nutrients, humic and fulvic acids, and pidolic acid.

At grain fill, Russell plans to use 3 ALO T6P. This acts as a signalling molecule regulating carbon metabolism, particularly when the crop's under stress.

"Later on, I'm trying to move carbohydrates up the plant and boost the bushel weights and this is where T6P helps. It also improves grain quality. This year, we're low on tillers, so maximising what we do have will be important to push yields," concludes Russell. ■

Pride in Pentre



Crop nutrition backstage

Although often revered for its crop nutrition portfolio, a series of strategic acquisitions has led FMC to significantly expand its biological product offering. *CPM* joins the team at their site at Pentre in Wales to learn more.

By Janine Adamson

Some would say it's difficult to rally excitement when it comes to visiting a chemical production site or factory, and that having seen one, there's nothing left to see. However, a combination of continuous improvement, commitment to safety and passionate staff means FMC's site at Pentre leaves a rather positive impression.

The pride plant manager Garry Clarke has in Pentre is clear. What was once known as Headland before being taken over by Cheminova A/S and finally FMC, the facility manufactures 130 bulk formulations and 1400 finished product lines. Garry says maintaining this output is all thanks to putting safety and efficiency first.

"With a team of less than 50 individuals operating across 22,000m^2, it might seem small-scale, but there's never a boring day. We're an upper tier COMAH site [Control of Major Accident Hazards; facilities that store, handle or process significant quantities of hazardous substances] and with that comes a responsibility of operating a manufacturing site that is highly regulated by the competent authorities with whom we work closely with, to ensure safe and compliant operation," he points out.

Continual investment

Pentre has seen much investment during the past five years. Recent additions include a semi-automated filling machine to help reduce manual handling, and a soon-to-be commissioned replacement stainless steel nitric acid storage tank which has improved safety features.

And with a fully kitted out on-site laboratory manned by three scientists, all product batches are tested prior to release as well as raw materials as required, to ensure quality.

But other than the obvious, does this have a benefit for the customer — the farmer? Garry says it's all about consistency. "We've invested in automation primarily for quality and safety reasons throughout the manufacturing process. This includes features such as automatic capping, weight assurance, a vision system and a labeller.

"But this also means there's little ambiguity for the customer — they know exactly what they're getting each time; consistent performance is our focus."

This commitment to continual investment will arguably assist FMC as it moves through unchartered waters to bring new technologies to the UK market. With mixer tanks at Pentre already dedicated to seaweed/biostimulant production, that's only the tip of the iceberg when it comes to what's on the horizon.

> *"There's little ambiguity for the customer – they know exactly what they're getting each time."*

Head of marketing and plant health, Geoffrey Bastard, says the acquisition of BioPhero in 2022 has opened the gates ready to integrate new biological technologies with FMC's existing crop nutrition portfolio.

"Globally, we're already a leader in the biologicals space but it's how we make these technologies fit to the UK market. An example being using pheromones to control fall armyworm in Africa and Asia," he explains.

"While this pest isn't native to the UK, there's potential to use the same techniques to produce specific pheromones to target diamondback moth in brassicas or codling moth in top fruit — both are troublesome for British producers."

But for the here and now, Geoffrey says FMC is investing considerably in the UK field testing of new biostimulants such as Accudo, which was first launched in South Korea for fruit and vegetable crops.

"We're also looking at wider biocontrol measures for cereals. However, our primary objective is to find a way to integrate these exciting solutions with plant nutrition and wider crop protection products."

Despite this focus on biological innovation, the company remains committed to its 'bread and butter' — foliar crop nutrition solutions. Product manager for plant health, Chris Bond, says formulation development in particular is a strength in FMC's armoury. ▸

Recent additions to FMC Pentre include a semi-automated filling machine to help reduce manual handling.

Applying foliar, from the leaf down, will be most effective in current conditions, and not just for nitrogen and phosphorous, says Chris Bond.

▸ "Research has shown there are three integral aspects of a quality formulation — solubility, contact with the leaf surface, and surface retention. As a result, we've undertaken a lot of work to evaluate the efficiencies of fertiliser salts — such as nitrates verses sulphates," he explains.

Furthermore, studies have shown that manganese, for example, is taken up by the plant much better in the nitrate form, which can have a positive impact on crop yield. "If you look at the speed of uptake of manganese into spring barley, FMC Jett (manganese nitrate) is the quickest. The plant's photosynthetic ability is also more efficient, thus crops are healthier and photosynthesising better," says Chris.

As part of work to further understand the nutritional status of crops nationwide, FMC conducts an annual tissue analysis survey

Overlooked deficiences.

Chris explains that while the main culprits are often well understood due to visible symptoms, such as nitrogen, magnesium or potassium deficiencies, the team wanted to investigate whether there are other nutritional issues being overlooked in the field.

The survey involves farmers and agronomists collecting plant tissue samples which are sent to a laboratory for testing. Once complete, reports are returned to the person sampling, as well as to FMC to formulate a reference database.

In 2023 alone, 1305 samples were analysed of which 73% were wheat, 20% barley and 7% oats. "The results indicated greater levels of zinc deficiency than in previous years, which could be attributed to the conditions — wet saturated soils not only increase the chance of leaching, but they also increase lock-up of micronutrients such as zinc," says Chris.

To crunch the data further, samples are mapped geographically to evaluate regional differences, which Chris says enables greater tailoring of nutritional products.

Products manufactured at Pentre are sold in more than 40 countries worldwide.

"Last year, the survey showed that magnesium deficiency was the worst in the South East, East Anglia and Central England regions. These areas had the greatest amount of plant tissue samples with below the optimum level of magnesium," he adds.

As for this season, Chris predicts a similar scenario. "Inclement weather has meant poor soil conditions and nutrient depletion, again due to both leaching and lock-up. Applying foliar, from the leaf down, will be most effective in current conditions, and not just for nitrogen and phosphorous.

"That's because foliar applications are the most efficient way to plug gaps in micronutrients too, which we know are yield building and therefore related to profit."

But with constant supply chain volatilities and global geopolitical events, what is FMC doing to protect the company and their customers? Garry admits the supply chain is a continual concern.

"We acknowledge we have to take action to de-risk the supply chain for raw materials and strive to offset the impacts which are beyond our control. After all, the products manufactured here at Pentre are sold in more than 40 countries worldwide which isn't insignificant.

"It's important to remember that we're also contributing to local employment while representing UK manufacturing. Where other industries have taken production abroad, we remain here in North Wales. It's something we're very proud of," he concludes. ■

Isoflex active update

Isoflex active, a new winter cereal herbicide, should be available for growers to use in autumn 2025 pending product registration.

FMC's Geoffrey Bastard says this is the biggest product launch to come from the company since it was established in its current form. "Trials are currently in the ground and we hope to host agronomy tours this summer. Equally, we have growers who are already experimenting with Isoflex active through R&D permits, to see how the active fits within their conventional weed control programmes."

Isoflex active is a new herbicide from the isoxazolidine family and is suitable for use in both winter wheat (pre- and peri-emergence) and winter barley (pre-emergence). Being a new mode of action, Geoffrey says it provides another solution to help combat blackgrass, ryegrass and broadleaf weeds while adding further diversity to aid resistance management.

"As with all crop protection manufacturers, protecting the longevity of all existing chemistry is of paramount importance," he concludes.

Geoffrey Bastard says growers are already experimenting with Isoflex active through R&D permits, to see how it fits within their conventional weed control programmes.

> *Azoles are the cornerstone of our disease control strategy.*

OSR disease

Fungicide resistance

A recent study has discovered a species of the phoma pathogen has become less sensitive to azole chemistry. *CPM* explores the findings of the research and what implication this could have on disease control.

By Melanie Jenkins

Depending on the year and who's being asked, phoma will either be the top or the second most prominent oilseed rape disease in the UK. Luckily, growers have had access to robust fungicides to control the disease, but now azole resistance has been detected, could this be about to change?

According to Dr Kevin King, plant pathologist at Rothamsted Research, OSR is facing a stream of emerging threats, but by having a better understanding of the pathogen population biology, this can help the industry to better protect the crop. One of the threats Kevin has identified in a recent study means azole chemistry is no longer as effective against phoma as it's previously been.

The study (co-funded by UKRI and BASF) was led by Kevin, and published in the journal Plant Pathology in March, has revealed that one of the two fungal species responsible for phoma leaf spot and stem canker is now showing decreased sensitivity to azole chemistry. "Phoma is caused by *Plenodomus lingam* (*Leptosphaeria maculans)* and *P. biglobosus* (*L. biglobosa)*. *P. lingam* isolates were first identified as showing decreased sensitivity to azoles in Australia and eastern European countries but we've now detected sensitivity shifts in isolates from western European countries, including the UK."

Azole efficacy

Despite resistance being identified, this doesn't mean azole chemistry will no longer work, stresses Kevin. "It might work less well than it has done previously, but this won't result in azoles not working in the field at all. However it's a warning for the direction of travel."

According to data from AHDB, phoma is responsible for losses of £100M each season, highlighting just how important access to effective chemistry is. Azoles were identified as the most commonly applied fungicide on OSR crops in 2022, with around 536,000ha treated with them, while strobilurins and SDHIs were used less frequently, according to the study.

Up until 2022/23 when the research was carried out, neither of the phoma pathogens in wester Europe had shown any meaningful resistance to azole fungicides, explains Kevin. "It was quite unusual in this respect. We'd seen resistance in light leaf spot but none in phoma until the first reports of it in Australia in 2017.

"But now, decreased sensitivity of azole fungicides for *P. lingam* is widespread in western Europe. Our results show that it certainly wasn't present in the UK a few years ago but there's resistance in England, Ireland and maybe Wales, and it's at a worryingly high level of about 85% of the isolates we tested, suggesting rapid and recent changes in pathogen populations," he says.

"Azoles are the cornerstone of our disease control strategy — if growers are going to spray anything, it'll be an azole," notes Kevin. "These act as inhibitors for a fungal enzyme, targeting the CYP51 gene, which is responsible for producing a sterol ▸

Dr Kevin King has identified a species of the phoma pathogen that has become less sensitive to azole chemistry in a recent study.

According to data from AHDB, phoma is responsible for losses of £100M each season, highlighting just how important access to effective chemistry is.

▸ essential for cell survival."

Resistance to fungicides typically occurs in two main ways, he says. "The first is gene target site alterations, which the study found no evidence of. The second, and the one present in the P. lingam species, has seen a stretch of DNA inserted into the upstream promotor region that's associated with decreased sensitivity to azole fungicides in almost all of the isolates that we looked at.

"This has resulted in a three to 10-fold decrease in sensitivity," he highlights. "It's important to note that this resistance has only been characterised in a laboratory and so it's difficult to quantify the differences in terms of decreased sensitivity in the field. But any evidence of this should be of concern because if gene overexpression is already happening, in future we might also see target site resistance emerge in the pathogen population. If this happens, both mechanisms will likely work in combination to decrease sensitivity to azole fungicides significantly. At that point, we might be looking at some degree of failure where azoles are applied against phoma."

The good news is that there's no signs of target site resistance and so far only *P. lingam* is demonstrating decreased sensitivity to azole chemistry, meaning *P. biglobosus* can still be controlled by it, says Kevin. "Furthermore, no resistance has been detected to SDHIs or strobilurins, so there's still good chemistry available for use against the pathogens."

Up until the results of this most recent study, research had identified *P .lingam* as being slightly more sensitive to fungicides than *P. biglobosus*, he adds. "Growers have previously tried to exclusively target *P. lingam* since it was the one most often associated with larger leaf lesions and cankers on stems. But what we have now is a situation where we should be targeting both species for sustainable control of phoma."

Another issue is that *P. biglobosus* has increased in importance during the past few years most likely because cultivar resistance being deployed was only effective against the *P. lingam* strain, explains Kevin. "There's no known genetic host plant resistance to *P. biglobosus* so this was putting selective pressure towards this species in the pathogen population. But because *P. lingam* is now less

Rothamsted Research Resistance

Resistance 2024, presented by Rothamsted Research, will showcase the latest situational analysis and research on pesticide resistance in the UK and globally.

The event will be held 23-25 September at Rothamsted Research, Harpenden, Hertfordshire, AL5 2JQ.

As well as highlighting the necessity for robust fungicide programmes, the detection of resistance to azoles in phoma also flags the importance of proactively monitoring pathogens.

sensitive of the pathogen species to azole fungicides the situation could switch around again and it could become an increasingly important problem."

Grower action

So what does this mean in practical terms and what can growers do? "OSR is becoming a bit of a marmite crop, growers either love it or hate it," says Agrovista's James Cheney. "But it's a key part of our arable rotations in the UK as we don't have many break crop options.

"However, with the combined loss of neonicotinoids and the increasing cabbage stem flea beetle burden, if you add in fungicide resistance to the mix, this could make it even more difficult to grow, squeezing margins and adding pressure to an already difficult situation.

"Now we're dealing with fungicide resistance in the crop, this moves OSR into the territory of things such as potatoes and cereals which we've seen resistance in for some time. Azoles are older chemistry, meaning they're often cheaper and are preferable when margins are squeezed — they're the chemistry everyone reaches for," highlights James.

"But given that there's now resistance to this chemistry, we're going to have to be proactive in our approach to fungicide sprays so that we don't end up on the backfoot chasing phoma. This means being aware of the risks, not relying too heavily on one type of chemistry and ensuring we're mixing modes of action."

James recommends taking an approach that starts with the soil. "Integrated pest management is a tool we can use to manage fungicide resistance, as well as prolonging the effective life of chemistry. Start by becoming soil health-orientated and getting it into the best condition possible.

"From this point it's key to optimise OSR establishment with good levels of nutrition to get the plants growing well. This'll also help plants to cope with adult CSFB damage as well as disease pressures — a healthy crop will always be able to sustain ingression from disease better than a weaker plant."

One way to improve plant health is by undertaking regular tissue testing throughout the season, says James. "This will indicate if plants are lacking in nutrition and will allow you to tailor your approach to nutrient applications more precisely, driving plant health. However, tissue sampling will obviously incur an extra cost, but if you adjust your nutrient applications as a result, it might mean you're only spending on the nutrients your plants require, rather than resorting to blanket applications."

Selecting varieties with genetic tolerances and resistances is another way to manage disease, but James points out that this is just one part of the bigger picture. "Selecting a variety with strong phoma resistance doesn't mean cutting back on fungicide spend. Instead, resistance should only be relied upon as a ▸

▸ management tool for when spray windows aren't available. Crops have to be looked after irrespective of resistance which just allows you more time to apply fungicides to a crop."

Preserving genetics

But Kevin flags that although growing resistant cultivars should be part of a wider disease management strategy, genetic resistance will still break down over time. "We're already seeing instances where *Rlm7* is breaking down due to the changing pathogen population to the disease. There are other countries that have a gene monitoring system to make sure cultivars are only grown in regions where the resistance will be effective, but this isn't something we do here."

James also warns growers to not cut fungicides rates. "It's a false economy to trim rates to save a few pounds per hectare. By doing this you'll unintentionally open the door for disease to potentially enter crops. It might seem expensive at the time, but opting for the most robust fungicide programme usually pays you back at the end of the day.

"It's fortunate that resistance has only appeared in one phoma species so far. This means it's really important that we stay proactive and keep rates high to help slow the spread. So keep dose rates up and mix modes of action by including SDHIs and strobilurins in programmes to ensure you're not just using azoles."

Kevin concurs, stressing the importance of appropriate resistance management through the use of mixtures. "Do your research into resistance management and ensure that azoles are being applied with other modes of action and that you're mixing and rotating the products you use. This is all part of the bigger picture of disease management and it links up with applying products at the appropriate time and the recommended rates. Rothamsted Research hosts a phoma forecast on its website which is a further tool you can use to plan your management."

P. lingam was the species of phoma most often associated with larger leaf lesions and cankers on stems.

As well as highlighting the importance of robust fungicide programmes, the detection of resistance to azoles also flags how vital it is to proactively monitor pathogens and the effectiveness of actives against them, says Kevin. "The next step on from the study is to take this research out into the field as there are lots of implications to our findings that can only be explored through further investigation, but this is always hindered by funding."

Kevin stresses that field studies will allow him to identify the distribution of the resistance. "We're working on a comprehensive study in collaboration with ADAS, but without further funding, this is limited. And it's also important for us to be able to identify emerging risks, so far we only really have the first link in the chain.

"Every year we apply a huge amount of fungicide and this imposes a huge selective pressure on the pathogen populations and we've already seen just how quickly these can change," says Kevin. "Although it's important to note that azoles are still working against phoma, so far we've only seen the emergence of resistance, this does mean we have to be proactively monitoring for further developments that could well be more damaging." ■

Better the devil you know?

OSR survey

Though oilseed rape has been plagued with challenges during recent years, for many it still remains the most viable break crop to include in a rotation. But are there opportunities to enhance performance? *CPM* finds out more.

By Charlotte Cunningham

Oilseed rape growers have had it tough during recent years, with loss of key chemistry and damage from cabbage stem flea beetle among some of the challenges causing devastating losses up and down the country. However, despite the complexities, a large number of growers still believe there remains value and potential for OSR in their farm's future.

This is according to the results of a recent *CPM*/NPZ UK (formerly LSPB) survey which looked at the challenges and future prospects for the crop.

While CSFB was perhaps unsurprisingly flagged as the biggest threat to OSR, followed by disease, the severity of difficulties with growing the crop is often dependent on region, explains NPZ UK's Chris Guest. "The majority of survey participants are farming in the East of England, East Midlands and Yorkshire and the Humber, which will all have different threat levels and challenges."

It's also a tale of two halves when it comes to cropping area with 32% of growers noting that they're growing the same amount of OSR this season as they did last year. This is in contrast to 30% who said they've planted a lot less this season.

Troublesome regions

"Those areas where growers are veering towards growing less OSR are naturally the regions which suffered most in the past growing year with damage from issues like CSFB — Yorkshire and the Humber and Lincolnshire we know in particular seem to have taken the brunt," says Chris. "The East, however, hasn't suffered as greatly which is why we're seeing such a contrasting standpoint when it comes to growing the crop — and actually in this area I imagine there are a few farmers wishing they'd planted more this year in hindsight, given the challenging autumn/winter, and in general it looks very well in this region."

Delving deeper into the figures, with regards to CSFB damage levels, 46% of growers said they've experienced a little loss this season, while 21% have had considerable damage and 17% complete crop failure.

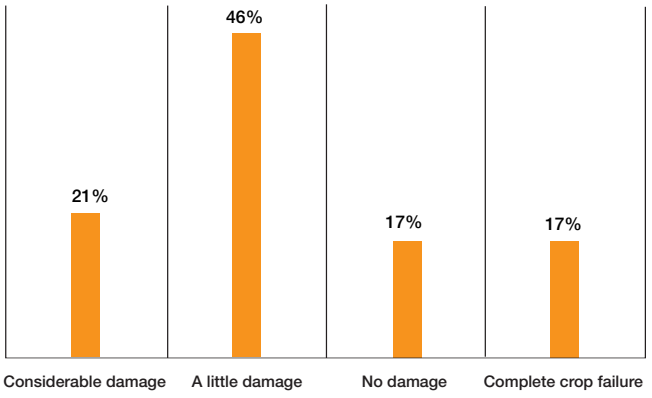
Among those who've experienced losses during recent years is James Thompson. Farming 196ha in Lincolnshire, OSR remains a core part of the rotation for James — despite its challenges — and accounts for 42ha of the total arable land. "We typically run a five-crop rotation of wheat, malting barley, OSR, maize and legume fallows," he explains. "We also carry out OSR trials on farm, testing out some of the latest varieties."

To say the crop has been tricky over recent years would be an understatement, says James. "We've had to change the way in which we grow and manage OSR on an almost annual basis for the past five years.

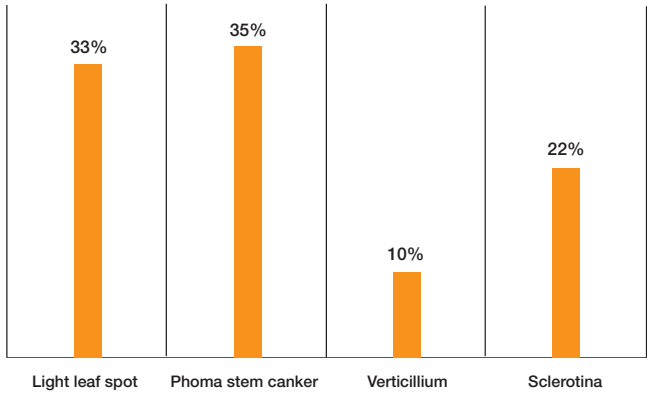
"We have a slight advantage because of our elevation, so we have slightly less beetle pressure. However, because the damage can be so severe, we've switched to a low-cost model for establishing the crop which includes leaving stubbles high and planting companion crops. Until the point that we confirm we have a viable crop, we put very little on it."

As a result of the ongoing challenge with cabbage stem flea beetle, largely as a result of the neonicotinoid ban, many growers (60%) have shifted forward drilling ▸

Have you experienced losses in this season's crop due to cabbage stem flea beetle?



What do you perceive as the greatest disease threat for your OSR crop?



▸ dates in a bid to get crops up and away to avoid the worst of the damage. "The push to learlier sowing is certainly levident with a large proportion of growers — more than half — stating that they're tending to get OSR in the ground pre-20 August," points out Chris.

James is one of those farmers who's pushed forward drilling dates and says he drills as early in August as possible just to get crops up and away. "If the previous crop allows, I drill at the start of August. But more importantly, I always make sure we avoid drilling the last 10 days of the month as we've found that tends to coincide with the epicentre of CSFB infestations. If we're not able to drill before then, we tend to go between 4-15 September."

But could earlier drilling date be stunting yield potential? Chris reckons so. "Something we're seeing and being asked a lot about at the moment, is why OSR yields are lower than they were 10 years ago despite the genetic progress we've made during that time period. But with this move to earlier drilling I think it's important to keep in mind that many people are now drilling commercial crops almost a month earlier than done in variety trials, which will undoubtedly affect performance.

"Crops are now in the ground for longer and this is often leading to plants being too developed pre-winter, which research has shown to have a direct impact on yield as so much of the yield potential is set before stem elongation, and obviously earlier sown crops are generally more prone to risk from disease."

Perhaps rather interestingly, 45% of growers said they would consider a later sowing date in September if there was data or research to support the benefit – so what does the data say?

As reported in the February edition of *CPM*, the value of later sowing has been the focus of research carried out at the University of Applied Sciences in Kiel, Germany, headed up by Dr Ute Kropf.

Ute has been looking at the relationship between reduced yields and climatic changes during recent years and believes the dip in OSR performance comes as a result of the difference in winter vegetation levels.

Delving into more detail of the science behind this, rising temperatures since 2014 has meant the dormancy for OSR period has been as short as 4-5 weeks, whereas previously this would usually be around 2-3 months. This means that crops keep growing for much longer during the autumn and winter and get going again much quicker in the spring.

Changing climate

Ute explains the reason this is relevant for yield is because it's determined early on in the crop's life cycle and with the back end of the year now tending to be warmer than usual, this yield is now being set in the winter rather than the spring.

This impacts yield potential due to accumulated thermal temperature and the role this plays in crop development. To explain the physiology principles behind this, each pair of leaves requires between 120-150°C of thermal heat plus 150°C for emergence, meaning about 600°C is required to get to the six-leaf stage.

At this point in the growth cycle, OSR moves into bud differentiation, which continues until the plants reach the beginning of stem elongation at around the 10-12-leaf stage.

When the total thermal temperature reaches around 1200°C, the plant reaches maximum bud density. After this point, the plant starts to reduce

The move to earlier drilling means crops are now in the ground for longer and this is often leading to plants being too developed pre-winter, which research has shown to have a direct impact on yield, explains Chris Guest.

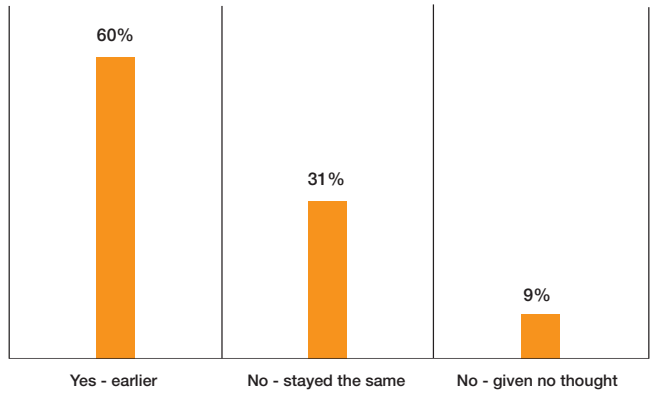
weak side tillers and flower buds to get enough food for stem elongation — which begins after this point — and growth in spring.

Applying the physiology to the data, during the traditional, colder winters, crops would have typically reached this stage at around mid-late March. However now, this is happening a whole two months earlier in January — with some of the early sown OSR elongating as early as November/December.

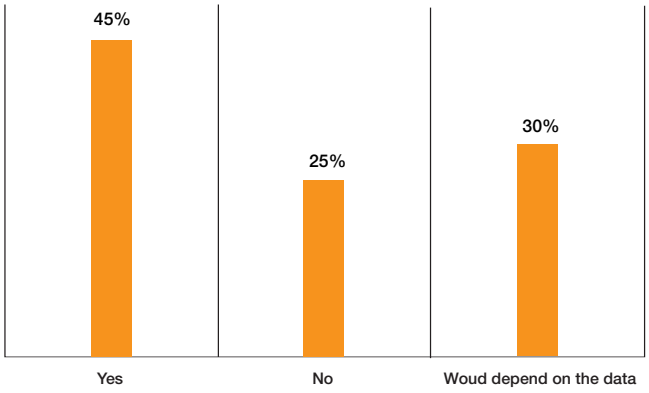
The impact of this is that crops have a shorter differentiation period and begin stem elongation with maximum bud density having already been reached due to the higher temperatures. What's more, buds are being formed in poorer conditions than they would be if they were forming in the spring, and all of this has a direct impact on yield.

Pete Berry, head of crop physiology at ADAS, has also been looking at the value of later sowing. "This is something we've been looking at and yes, there's a good opportunity to sow later into September where appropriate. If we look at some of the farmers in the Yield Enhancement Network as an example, one of the top three yields last year was from a late

Thinking back to drilling, has the ban on neonicotinoids impacted your drilling dates?



If data/research supported it, would you consider a later sowing date in September?



September sown crop.

"That said, later drilling does come with risk. This includes potentially poor establishment if the weather turns and potentially a less pigeon-proof crop over winter if plants are small. Though early drilling is a more popular option, I think there's potentially a hidden cost to it in terms of in reduced yields, which we've seen over recent years.

"Earlier drilling can also lead to all sorts of other additional management issues such as over-large canopies which require regulating, lodging, etc. Essentially, both sowing time options have pros and cons so it's a case of weighing up the balance and risk level on individual farms."

Chris adds: "We're not saying delaying drilling is the silver bullet, but there seems to be some merit, where appropriate, to consider this."

Though he's a self-confessed advocate of earlier drilling, James believes that if the science points towards yield benefits by targeting a later window, then it's worth paying attention to. "Having grown OSR for 20 years, the climate has definitely impacted crop performance and yield. If there's more information out there about how we can optimise growing what's already a tricky crop, then we'd be crazy not to take notice and consider implementing it within the management plans."

For those looking to pursue the potential in drilling later, careful variety choice will be a fundamental part of the success strategy, adds Chris.

Pete agrees: "We've seen hybrids in particular seem to do better when sown later and in slightly more challenging weather conditions. But the basic principles still apply when it comes to later drilling in terms of making sure you have a good seed-to-soil contact."

PGR applications — or lack there of — could also be playing a role in reduced performance, believes Chris, with the survey highlighting a lack of autumn applications. "PGRs can be a really useful tool to help slow down crop development if it's a particularly warm autumn or winter."

Pete adds: "It's a popular technique on the continent, where they're using autumn PGRs to make sure the growing point stays below the soil surface and is less vulnerable to frosts over winter. Obviously it's not such a risk here, but it can be.

Slowing development

"But as Chris says, there's also the possibility to use them where crop canopies are developing quickly, which helps with such an increase in thermal temperature sum in the autumn due to the challenging climate. From a lodging perspective, this is most effective when followed up with a spring PGR too."

For best effect, Pete advises applying autumn PGRs early on in the season. "The principle behind this is slowing the growth down early on rather than letting the crop get too ahead. If you wait too long, it'll be too late to have an effect."

While the majority of growers said they are exploring other crops to replace OSR, Pete stresses that alternative break crops also have their challenges. "CSFB is still a massive threat, and there are no reliable solutions to control it at the moment. It's also spread its geography and now more western and northern regions are being impacted when they perhaps previously weren't. That said, OSR is still one of the best break crops for gross margin and it's hard to ignore that."

Chris concludes: "There's definitely still a place for OSR

Pete Berry says that one of the top three yields from the OSR YEN last year was from a late September sown crop.

— we believe that and so do growers as shown in the survey. However, we acknowledge it's a difficult crop. Therefore, incorporating tools such as resilient hybrid varieties, changing drilling dates and utilising PGRs could really help growers to get the best out of what remains an incredibly valuable break crop." ■

Winner announcement

Congratulations to prize winner Richard Budd from Kent who responded to the *CPM*/NPZ UK survey and provided insight on the future for OSR. Richard won a Schoffel coat worth more than £350.

He answered the tie-breaker question of "The one thing breeders or the wider industry could do to improve the future prospects of UK oilseed rape is…"

With: "Concentrate on breeding crops suited to late drilling windows with high vigour."

To engage with future surveys, visit the *CPM* website and sign up to the newsletter.

> *"You only really find out about a variety when you grow it yourself in your own fields under your own system."*

Generating better variety intelligence

Forward-thinking farmers

Large-scale on-farm testing of oilseed rape varieties is providing the best possible crop resilience intelligence for growers across the country. *CPM* reports on the programme behind the trials.

By Rob Jones

With oilseed rape in particular, testing promising varieties alongside one another and a leading Recommended List standard at scale, on-farm, provides a wealth of bespoke insight. And when that's part of a fully-integrated programme including replicated plot trials and specific trait research studies, it demonstrates their true colours for other growers too.

That's why the farm strip trials element of Bayer's National Hybrid Proving Programme (NHPP) with current and up-and-coming Dekalb varieties is viewed as a fruitful exercise.

The trials, overseen by up to 15 growers each year, monitor the performance of at least 0.5ha of each variety in adjacent strips under each farm's standard commercial practice. Extending from Hampshire to Angus in Scotland, and from Herefordshire to Suffolk, they encompass a wide range of establishment systems, sowing dates and agronomic regimes as well as production environments.

Bayer trials manager, Richard Williams explains that in addition to harvest performance, a host of variety growth and development traits are recorded throughout the season including establishment vigour, crop uniformity, speed of development before winter, hardiness, and earliness of development after winter.

"Apart from being large enough to replicate a commercial crop and well spread across the country, the farm strips allow us to measure plant population, uniformity and individual development differences in a way that isn't possible with small plots," points out Richard.

Crop performance

"Among other aspects, they enable us to see which varieties perform relatively better when the going gets tough and plant losses from the weather or pest damage are more serious. We can also identify those that perform better from earlier or later sowing and under different establishment regimes. This sort of intelligence is especially valuable to growers with the production climate as uncertain as it is these days," he says.

At Ashton Farms near Trowbridge in Wiltshire, Martin Smart has been running some of the country's most comprehensive farm strip trials for more than 20 years. He considers them so valuable that he won't grow new OSR varieties widely until he's put them firmly to the test.

"We require more information on varieties than we can ever get from the RL alone," he stresses. "We want to see how varieties grow on our soils with our drilling, fertiliser and crop protection regimes; which take-off rapidly enough in the autumn to get away from flea beetle and slugs, as well as after sowing well into September.

"It's also important to see which varieties cope well with the winter and grow-on rapidly enough in the spring, and importantly, which don't," says Martin.

To conduct the trials, the farm sets aside adequate space — 15ha this year — to test 1ha+ blocks of the varieties. "Walking them regularly through the season gives us a good idea of their abilities. We can see how they develop from the 30-50 seeds/m^2 we sow, how their winter losses compare, and how relatively well they branch, flower and mature.

"With the charlock problems we have on a lot of the ground we farm, we've been particularly impressed with the Clearfield hybrids, DK Imprint CL and DK Impressario CL in recent years, going on to grow them across a substantial area," adds Martin.

Richard Williams says in addition to harvest performance, a host of variety growth and development traits are recorded throughout the season.

"And the latest Clearfield, DMH464 seems to be following in their footsteps. Equally, V367OL is impressing us with its vigour, standing out clearly whenever we walk the field."

With the wet feet crops have had for a good five months, Martin isn't expecting a bumper year for yields. But he says his trials should really 'sort the men from the boys' as far as resilience is concerned, which is what he requires with OSR growing as challenging as it is today.

Up near Montrose in Scotland, South Esk Farms manager, Neil Macleod, also views the strip trials he's run for Bayer as a valuable benchmark for his commercial cropping.

"I'm never excited by small plot trials," he says. "They don't tell you much about varieties in commercial practice — you only really find out about a variety when you grow it yourself in your own fields under your own system. That's the real test."

With an average over-the-weighbridge yield of 5.20t/ha across the seven hybrids, his Dekalb trial performed well again last year — DK Exsteel, DK Excited and DK Exstar all delivering more than 5.30t/ha. As with his current farm favourite, he values them for their early get-up-and-go.

"Our climate means OSR has to grow away quickly so we have a big enough canopy going into the winter. In our experience, you simply can't have too much green leaf at this stage, providing you get your plant population correct of course. We find sowing at a rate of 50 seeds/m^2 about right for our direct drilling regime," explains Neil.

Also requiring varieties that establish quickly and strongly is arable manager Paul Cornwell at the Rougham Estate near Bury St Edmunds in Suffolk. This time, it's due to the pressure of cabbage stem flea beetle and stem weevil because if the pest is moving at 2mph, the crop has to be moving at 5mph, he says.

The estate has been hosting field-scale strip trials for Bayer for several years and Paul values the insight they give into how varieties perform on his soils, ranging from blowing sands to heavy clays.

At the moment, the farm's commercial crop is something of a mixed bag overall, looking better on the lighter land where it's been drier over the winter. "We have some nice looking Exsteel. The trials give us upfront knowledge of variety traits that fit our system and soils, which helps us to plan our variety choice with confidence," notes Paul.

Neil Macleod says he's never excited by small plot trials because they don't reveal much about varieties in commercial practice.

"We're looking for varieties ▶

Farm trial insights

In last year's field scale testing, the five main Dekalb Ex hybrids averaged an output of 4.26t/ha across strip trials in a season when most sites saw a noticeable decline in performance, says Richard Williams.

He points out that average yields varied more widely between sites too, but those with above-average production were characterised by better spring plant populations.

"The higher yielding sites had average counts of 33.1 plants/m^2 in the spring, against 23.3 plants/m^2 on the lower yielding ones. The close relationship we recorded between performance and spring populations last season underlines the critical importance of achieving 25-40 plants/m^2 for the most productive canopies (see chart).

"The cold, wet early winter of 2022 made a big difference to plant populations," he adds. "Overall losses between establishment and stem elongation across our sites varied from less than 10% to more than 40%.

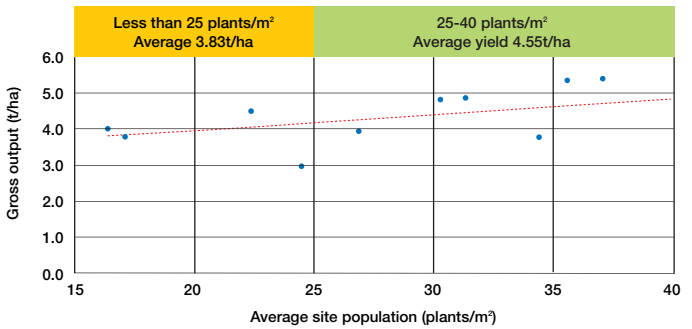
"While they shouldn't be too high, we find spring populations of at least 30 plants/m^2 especially valuable in enabling crops to cope with challenges such as flea beetle larvae and late-pigeon grazing."

Underlining the greater branching at sites where 2022/23 populations were sub-optimal, the average yield of 19.2g/plant across all varieties was noticeably higher than the 14.7g/plant where populations were on target at 25-40 plants/m^2, explains Richard.

"We recorded some particularly interesting varietal differences at the low population sites too. Three of our hybrids yielded comfortably over 21g/plant on average, while others only managed 17g/plant from virtually identical populations (see chart). This suggests there may be valuable differences between even the most vigorous hybrids in their ability to compensate for plant losses.

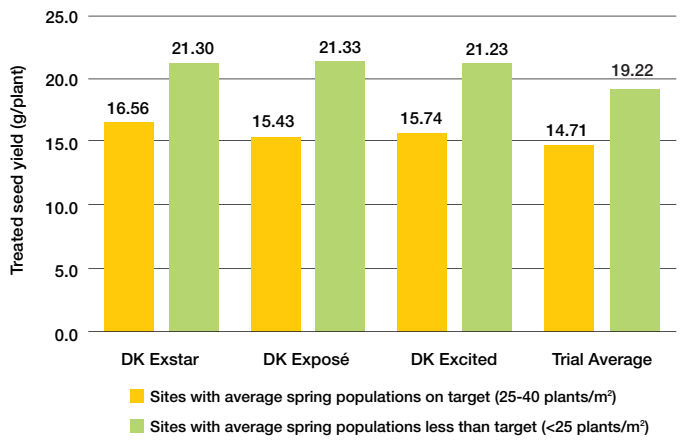
"We require a further season's data to be sure. While relatively high levels of plant losses on some of our sites this past winter will do little for year-on-year performance, they're likely to be really useful in confirming the relative resilience of our hybrids," he says.

Spring 2023 plant population and gross output



Source: Bayer National Hybrid Proving Programme – farm strip trials 2023

Relative hybrid compensation abilities 2023



Source: Bayer National Hybrid Proving Programme – farm strip trials 2023

Cabbage stem flea beetle and stem weevil pressure means Paul Cornwell is looking for varieties with rapid establishment and vigour.

Forward-thinking farmers

With robotics, gene mapping and molecular markers, digital technology and bio-chemistry, it's a dynamic time for anyone involved in farming.

Challenges lie ahead for UK agriculture, such as improving productivity while minimising its environmental footprint. But farmers have always had to deal with change and adopt new ideas and technology.

Bayer is at the core of these agricultural advances, working with farmers throughout the UK and further afield to trial and develop new diagnostic tools and evaluate different farming strategies, coupled with exciting plant breeding and product development programmes. It will help us develop innovative solutions and services to assist farmers achieve profitable and sustainable agronomic practices.

Despite the challenges facing UK agriculture there is much to look forward to. This series of articles focuses on how innovation and partnership between farmer and industry will help us face the future together.

▸ that give us strong, rapid establishment and vigour to grow on through the winter months to hopefully grow away from flea beetle, winter stem weevil and pigeon attacks, while maintaining oil quality and yield. It's also about varieties with pod shatter resistance and a good level of all-round disease resistance," he adds.

For the second year in a row, DK Extremus was the stand-out variety in the most recent trials Velcourt manager, Henry Hitchcock oversaw at the Marlborough Downs near Swindon.

While most farms saw lower yields than in 2022, the main Dekalb Ex hybrids in Henry's 2023 trial averaged a good half a tonne more than the previous season at 5.07t/ha. What's more, his DK Extremus was almost a tonne up on this at 5.95t/ha and even further ahead of his farm crop of a competitor TuYV-resistant hybrid.

"The trials give us a good idea of the different ways in which the varieties grow and develop. Our biggest concern is vigour and speed of development in the autumn and the DK varieties save us a lot of hassle and worry. Bigger GAIs (green area index) in the spring mean useful savings on canopy nitrogen in our variable rate regime," he says.

"As well as taking off well in the autumn, Extremus has the advantage of being rapid in the spring, helping it to grow away from pigeons and CSFB larvae. With our focus on managing risk, this is certainly a variety that looks set to be a valuable addition to our future OSR growing," concludes Henry. ■

According to Henry Hitchcock, larger GAIs (green area index) in the spring mean useful savings on canopy nitrogen in variable rate regimes.

Resilience focus

Alongside extensive field-scale grower testing, Bayer's National Hybrid Proving Programme combines two other core pillars to put current and emerging Dekalb OSR varieties through the most rigorous combination of resilience studies in parallel to official National List trials.

Each year, replicated regional small plot trials managed independently by NIAB and Scottish Agronomy assess up to 40 varieties — including leading competitors — under standard testing regimes to identify their relative performance and agronomic characteristics.

While these trials can't provide the 'real world' performance data of on-farm testing, they are able to include a wider spread of varieties at an earlier stage in their development, and set useful benchmarks for both performance and key agronomic characteristics, says Bayer campaign manager, Grace Hayward.

Bayer's third OSR proving pillar focuses on evaluating key varieties for particular agronomic traits valuable in boosting crop resilience. These currently include tolerance to verticillium, sclerotinia and reduced levels of nitrogen fertilisation.

"We've been testing our varieties for their strength against verticillium with ADAS under its standard protocol on sites with a historically high level of the disease for several years," says Grace. "Most of our current varieties are showing decent levels of both tolerance to the disease and premature ripening when compared with known susceptible and resistant controls.

"Separate inoculated trials also highlight Dekalb varieties that have a sclerotinia behaviour significantly better than a variety claiming resistance to the disease. At the same time, other replicated studies show a number of our hybrids lose less yield than competitor varieties when nitrogen levels are cut back.

"Altogether, we're confident that the novel proving programme we've developed to underpin our OSR varieties provides much better evidence of their real performance abilities than small plot trials alone," she concludes. "Especially so, as far as their commercial resilience is concerned."

Bayer is confident that the proving programme it's developed to underpin OSR varieties provides better evidence of performance than small plot trials alone, says Grace Hayward.

Raising the mainsail

Insider's View: OSR

Raise the mainsail and cast off because LG Armada is setting sail with the highest yield of any oilseed rape variety, backed up by a hold loaded with traits. *CPM* goes on a voyage of discovery to explore the map of the variety.

By Melanie Jenkins

Limagrain's flagship oilseed rape offering for this season, LG Armada, might be a single variety and not a fleet, but it's certainly leading the rest of the flotilla.

With the highest yield on the AHDB Recommended List 2024/25 at 106.5%, alongside a plethora of agronomic and disease traits, its breeder hopes it'll sail to victory. "This is one of the most trait-loaded varieties Limagrain has produced," says the firm's Liam Wilkinson. "Armada has pod shatter, TuYV, the *Rlm7* gene, stem health characteristics and is the first of our seventh generation of hybrids with the Sclero-flex trait."

According to Openfield's Duncan Durno, Armada's main attribute is its high yield, but the key to this is the traits which support it. "The yield of this variety is so secure because of the traits it has, and this has been proven through its rise to the top of the RL during a number of tricky seasons. I first saw Armada in 2021 and it's always stood out for its yield, but it also has impressive growth characteristics meaning it has the whole package."

Although OSR is an important crop in the UK that can provide strong returns, it can also be a risky crop to grow, says Liam. "One way to manage this risk is to select a variety with as many stacked traits as possible from the beginning, and this is what we're trying to deliver in our catalogue and especially with Armada."

Stem health

Looking at Armada's stem health traits, it scores 6 against phoma stem canker on the RL, as well as having the *Rlm7* gene, and through the Limagrain Sclero-flex system has a quantitative genetic tolerance to sclerotinia, says Liam. "This provides another tool to work with against disease on farm.

"We're currently seeing situations of a prolonged flowering period because of cabbage stem flea beetle damage, or due to drought or persistent wet conditions, meaning there can sometimes be multiple growth stages in a single field making timing fungicide sprays almost impossible. But with sclerotinia tolerance, this allows a wider window for fungicide applications," he adds.

"The variety also has good cylindrosporium and verticillium resistance, so we know it provides a robust package and takes as much risk out of managing the crop from a husbandry point of view as possible after emergence."

According to Limagrain's OSR breeder, Coretta Kloeppel, Armada's light leaf spot resistance is an important aspect to help UK growers optimise their integrated pest management strategies. "The variety has demonstrated strong LLS resistance which is important because this disease is becoming an increasing issue for farmers.

> *"We're trying to do everything we can do genetically to make crops easier to manage."*

Although the disease is less of an issue for growers on the Continent, it's vital for our UK material to include this as a feature."

A further quality that's become gradually more desired on farm is pod shatter resistance, says Liam. "By the time pod shatter resistance comes into play, you'll have spent everything on your crop that ▸

Liam Wilkinson says Armada has good cylindrosporium and verticillium resistance to help remove as much risk as possible from managing the crop.

Armada's yield security has been proven through its rise to the top of the RL during a number of tricky seasons, says Duncan Durno.

▸ you're going to and so it's a no brainer for a variety to have this trait to secure yield.

"And it's not just about producing high yielding varieties anymore — there're lots of high yielding varieties out there — it's about securing that yield on farm," he adds. "We're trying to do everything we can do genetically to make crops easier to manage."

Liam and Coretta both feel that one of the key indicators of Armada's ability to perform is from its wide trialling and uptake across Europe. "Armada is Limagrain's flagship variety for Europe," says Liam. "We've run 75 different trials across Europe and the UK where Armada has been tested in all extremes including for winter hardiness, sclerotinia resistance, drought tolerance and in pressured CSFB situations — it's been tested for everything. Not only has it stood out in UK trials, but it's performed in higher pressure situations in Europe."

Robust performnce

Duncan believes that Armada's performance across the different agroclimatic regions of Europe, as well as the various soil types and situations, means it's demonstrated strong robustness. "The conditions we're having to deal with in this country are only becoming more varied, so the fact Armada has done well across the Continent can only be a good thing."

Liam points out that Armada is a true UK variety, suited to all regions. "The variety has a wide drilling window with very good initial vigour, something we've identified as important to help it to grow away from adult CSFB. This also allows you to time drilling more specifically, so rather than being forced to drill into the early window, you can almost forget the date and just drill when conditions are right, whether that's early August or into September."

Breeders are constantly looking for varieties that are more resilient and tolerant to CSFB larval damage, as well as trying to identify agronomic qualities that might help against adults.

Duncan agrees that Armada's stacked traits gives growers more flexibility in their choice of drilling date. "Armada's disease scores come into play here as the earlier you drill the more risk from verticillium and TuYV, but with Armada's traits there's an extra level of protection when opting for the early drilling slot."

Armada's growth habit has impressed Duncan. "It has very strong autumn vigour ▸

The value of vigour

The crop of Armada came out of the ground quickly with quite aggressive growth, says Charles Parkinson.

Farming at H E Parkinson in Lincolnshire, Charles Parkinson is growing LG Armada as one of his oilseed rape varieties in his combinable cropping operation. As well as OSR, he grows wheat, barley, and beans, with around 150ha down to OSR this year.

The land Charles works with consists of light soils and drought is a significant issue, especially during establishment, which means having vigorous OSR varieties is highly advantageous. "We've changed our practice a lot during the past five years to help mitigate the loss of moisture during this period. Gone are the days of subsoiling and drilling OSR over a three-week period, now we use a disc drill and plant it in two days.

His crop of Armada was drilled with a Horsch Pronto on 11 and 12 August last year, in line with his preferred drilling window of 5-12 August. "The variety was suggested to me by Duncan Durno of Openfield because of its performance across Europe and because we've done well with LG Ambassador in the past. Armada seemed a step forward that would also grow aggressively in the autumn as well as being part of Limagrain's Establishment Scheme."

The crop had a graminicide applied to it fairly quickly as it went in behind winter barley, and then an application of Belkar (halauxifen-methyl+ picloram) in October, which was followed up with Astrokerb (aminopyralid+ propyzamide). "We're in a high-pressured poppy situation and broadleaf weeds are an issue for us. I went down the Belkar route as it means I can make decisions a little later compared with a traditional pre-emergence spray when it's too early to tell if the crop will be viable or not.

"The variety came out of the ground quickly with quite aggressive growth, keeping up with Ambassador. It's shown little to no disease and grew well throughout the winter despite water logging," says Charles.

As of mid-April Armada had received 170kgN/ha across two splits and Charles plans to variably apply more nitrogen to one patch in the coming weeks. The crop is due its first fungicide application, which will consist of Skyway 285 Xpro (bixafen+ prothioconazole+ tebuconazole), as well as bitter salts and magnesium. "I applied boron in February/March but no fungicide as there weren't any signs of disease, so I didn't feel the crop required treating."

Charles only grows OSR one year in six and says since he moved to this wider rotation it's helped with disease pressures, alongside selecting varieties with strong levels of resistance. "Many farms have struggled with OSR and our acreage has decreased during the past five years. I now grow a more manageable area on a wider rotation and will only plant the crop when establishment conditions are suitable. If the crop looks ropy, it comes out."

Although he's happy with how Armada has performed so far, he'll only grow the variety again if he's happy with what it yields come harvest. "I'm leaning towards continuing with Armada based on how it looks now, but until I have the yield maps from the combine, I can't say for sure. It has everything going for it as a variety including, TuYV, phoma and pod shatter resistance, but it has to yield well."

There are 75 different trials across Europe and the UK where Armada has been tested in all extremes including for winter hardiness, sclerotinia resistance, drought tolerance and in pressured CSFB situations.

▸ and is early to get away in the spring with strong growth, producing thick stems and branching out a lot compared with other varieties, to create a robust, strong plant."

Steady growth

The key thing is that Armada won't grow too ahead of itself, adds Liam. "In some cases, early drilled OSR varieties can become too big, which can be an issue in wet years where crops stem extend too quickly. Although Armada doesn't set off too fast in the spring, once it starts stem extension, it goes very quickly — something which can help to reduce larval CSFB pressure."

Tackling CSFB is something Coretta says the industry is directing a lot of effort towards. "Breeders are constantly looking for varieties that are more resilient and tolerant to larval damage, as well as trying to identify agronomic qualities which might help against adult CSFB."

Another aspect of Armada that Duncan feels is important is its winter hardiness. "Last year Armada really stood out for this which is critical for those wanting to drill early. In trials, Armada appeared to keep more leaf area than other OSR varieties at the end of January and into early February last year when we had hard frosts."

As is the case with most hybrid crops, Armada will likely benefit from an application of boron, says Liam. "Especially in years like this one where very wet conditions have meant boron hasn't been readily available, and where there have been prolonged flowering periods, crops would have benefited from being backloaded with boron in the autumn. Hybrids varieties stem extend earlier in the spring, so if you can put an application on in the autumn, this will help massively."

As for how Armada will perform in the market, Liam is optimistic about its impact. "I think Armada will be one of the biggest varieties in the UK and the hope is that it'll have the longevity of LG Ambassador and LG Aurelia. Both of these varieties have a loyal following and I hope Armada will become a mainstay variety on farm."

Duncan believes that Armada is a variety without compromise. "Nothing is compromised for its yield performance so I don't see why you wouldn't want to grow it. There's a drive to reduce risk on farm and by selecting a variety that minimises this in as many ways as possible will help with both crop and yield security." ■

Overcoming adversity

> *“Vigour is a tool which allows drilling when the conditions are right.”*

Varieties

Oilseed rape breeders continue to be busy behind the scenes exploring genetic traits to help growers overcome the many challenges associated with the crop. *CPM* looks at some of the latest varietal launches shared at press briefings and open days.

By Janine Adamson and Rob Jones

It’s a crop which undoubtedly faces many challenges, from cabbage stem flea beetle and slugs to clubroot and sclerotinia, but the plant breeding sector continues to invest in oilseed rape in a bid to help growers to reap its benefits within rotations.

A theme of much of the OSR breeding pipeline appears to be performance under adverse conditions, which Sarah Hawthorne says DSV is aiming to address.

“Pod shatter resistance has become an increasingly sought after trait for OSR growers faced with challenging growing conditions and the necessity to maximise efficiency of production.

“Of the 31 varieties on the current Recommended List, 19 are identified by breeders as having pod shatter resistance including the DSV varieties Matrix CL, Beatrix CL and Miraculix CL with our other popular varieties DSV Duke and Duplo also sharing the gene,” she explains.

Sarah says for several years, many growers have thought of pod shatter as an absolute, with varieties either having resistance to it or not. “But the latest thinking is that there are degrees of pod shatter resistance, with organisations such as the John Innes Centre suggesting many factors are at play in both the physiology of plants and how they react to external conditions.”

Seed loss

“In particular, temperature at both vernalisation of the seed and in the later stages of the plant’s development can have a profound effect on whether seed is lost regardless of whether varieties have pod shatter genes or not,” she adds.

According to DSV UK managing director, Dr Alex Doering, loss of seed from pods to the surrounding environment is a natural behaviour of many plant species.

“But if this opening occurs too easily, seed can easily be lost during harvest leading to poor yields and increased volunteer pressure in the following crop.

“While high pod shatter resistance may reduce the losses before and at harvest, it can also increase the losses at harvest substantially because the pods can’t be sufficiently threshed by the combine and seed will remain within the pod,” he points out.

Alex adds it’s important to create a balance between pod opening for an easy harvest and the necessary pod shattering resistance, so not too much seed is lost at harvest. “Many factors affect how and when an OSR pod shatters, including prevalence of stem diseases such as verticillium wilt, external weather conditions, the physical strength of pods, the evenness of them and mechanical damage through the growing season.”

Sarah says current DSV varieties address many of these potential impacts with features such as high tolerance to verticillium wilt, phoma stem canker resistance and tolerance to sclerotinia.

Furthermore, those varieties classed as having ‘Powerful Pods’ by the company boast three core characteristics — greater flexibility of the pod structure, improved function of the pod valves, and greater space around individual seeds.

“Increased flexibility, for example, gives pods a resilient ‘rattle-proof’ structure which makes them less friable and more able to absorb energy rather than break open in ▸

Pod shatter resistance has become an increasingly sought after trait for OSR growers faced with challenging growing conditions, says Sarah Hawthorne.

Dr Alex Doering says it's important to create a balance between pod opening for an easy harvest and the necessary pod shattering resistance.

▸ conditions with extremely high winds or hailstorms.

"This also allows pods to cope better with the uneven tensions produced from drying after rainfall, which can lead to seed pods splitting," comments Sarah.

Powerful Pod varieties also have a stronger valve margin — the mechanism at the base of the pod which controls the opening of the valves, effectively the sides of the pod containing the seeds, she says.

"This avoids early triggering of the opening process particularly when pods are stressed such as in adverse weather or when going through the combine header. More space in individual pods allows seeds to develop fully as they mature so a variety can reach its full yield potential, but it also stops growth stressing the pod which can again lead to premature failure."

Results from DSV's own trials and an AHDB analysis of pod shatter results have underlined DSV Dolphin's performance in respect of harvest performance, adds Sarah.

Seed retention tests

"In random impact tests (RIT) carried out at the DSV breeding station in Germany, where pods from different varieties are bombarded with steel ball bearings in controlled conditions, Dolphin achieved one of the best scores for seed retention."

Dolphin's agronomic package is also worthy of note, points out Sarah. "It's recommended for the East/West region on the current RL with a gross output of 106%, the joint highest on the list, and this is supported by features including a 46.6% oil content.

"With TuYV resistance and scores of 7 for stem canker, 8 for lodging and a 9 for stem stiffness, Dolphin is a simple to grow OSR well suited to the current economic and environmental climate. It also has a 7 for flowering and a 4 for maturity," she says.

Consistent performance under tough conditions is a standout feature of the latest Dekalb hybrid OSR variety too, says Bayer. Launching at this year's Cereals Event, DK Excentric out-performed every other Dekalb hybrid bar one in two years of trials (2022 and 20233), delivering gross output-topping performances on the four most demanding sites.

Overall, it's the top-performing UK variety to emerge from Bayer's precision breeding programme, with an average gross output of 5.11t/ha in two years of NIAB and Scottish Agronomy trials, delivered by a combination of above-average yields and oil content in excess of 45%.

Excentric brings together a combination of agronomic characteristics and growth habit suitable for early planting, yet has the flexibility for sowing into September should soil, pest or weather conditions necessitate, says Bayer's Sarah Bebb.

"In our trials in Scotland and down into both the East and the West, its performance has been very consistent. It's performed equally as well as either the top-yielding

Results from DSV trials and an AHDB analysis of pod shatter have underlined Dolphin's performance in respect of harvest performance.

variety or close to the top at almost every site," she explains.

Sarah Bebb says the variety's across-the-board agronomic strengths include an 8 for stem stiffness and 9 for resistance to lodging while a stress tolerance package includes good resistance to light leaf spot, phoma stem canker and TuYV.

According to Limagrain's Liam Wilkinson, there's been a continuous flow of innovation within OSR breeding, which could be argued as in advance of any other crop species on farm. However, he believes there's an opportunity to make more of these advancements through optimised crop husbandry.

"An example being, unlike TuYV, there's no known genetic resistance to cabbage stem flea beetle. But our work has shown that drilling at higher seed rates isn't actually the way to go, because the thicker the crop at cotyledon stage, the more vulnerable it is to larval damage.

"Instead, vigour is what helps OSR to grow through potential damage. This doesn't mean it gets you out of trouble — vigour is a tool which allows drilling when the conditions are right, which could mean waiting and sowing a week later for example," he says.

Liam hopes that by redefining what's understood as vigour, growers will be better supported in achieving good OSR establishment. "It's not just about how to get a crop out of the ground, it's about achieving winter biomass with a target of eight leaves, 8mm of collar diameter and 15cm for the taproot. The higher the seed rate, the more competition there is per plant, which prevents it from getting to that key stage.

"OSR thrives with a lower seed rate and having space. Achieving this optimum winter biomass means better tolerance of larval damage, improved weed suppression and increased winter hardiness.

"Understanding how a variety reaches this point, as well as 3-4 leave stage to withstand adult CSFB damage, puts growers and agronomists in a more informed position when it comes to managing a crop including sowing date," he stresses.

To illustrate, Liam says LG Aviron is a quick to establish hybrid OSR which continues to push through and achieve optimum winter biomass. As a result, he recommends Aviron for later sowing dates because of its flexibility.

In addition to this benefit, the variety offers a traits package including TuYV, pod shatter resistance, RLM7 phoma resistance, plus the N-Flex characteristic for improved NUE.

Otherwise, LG Ambassador also performs well in a later drilling scenario, as does LG Armada and LG Academic, advises Liam.

But ultimately, he argues that ▸

Liam Wilkinson hopes that by redefining what's understood as vigour, growers will be better supported in achieving good OSR establishment.

▸ OSR is still a relatively new crop within the UK cropping landscape and there's still a lot to discover. "It's a learning process about how to best use traits and genetics within a practical on-farm scenario," says Liam.

Companion crop solution

Back to the topic of combatting CSFB, RAGT continues to focus on its new companion cropping approach which aims to protect OSR from two significant insect pests while supporting SFI applications.

Greenpack Gold companion crop mix contains fenugreek, buckwheat and berseem clover, which help protect small, vulnerable OSR plants from CSFB attack in the autumn. The mix also contains a very early flowering OSR variety to help reduce pollen beetle damage in the commercial OSR crop the following spring.

"The repellent effect of the fenugreek and the camouflaging effect of the buckwheat and berseem clover create a defence against flea beetle," says RAGT managing director Lee Bennett. "This is likely to be more effective than spraying pyrethroids, which is now next to futile.

"In addition, the early flowering OSR variety which is included in the mix at about 10% of the normal sowing rate, blooms 7-12 days earlier than the main commercial variety," he adds.

Lee says the solution works because the beetles are 'addicted' to pollen and will go to the first available source. "Once there they'll stay put, leaving the later-flowering commercial variety to grow through the vulnerable bud stage unscathed. Beetles will only migrate back to it when it comes into flower, when they act as beneficial pollinators."

This two-pronged defence provides an excellent opportunity to claim a £45/ha SFI payment for growing a crop without insecticides (IPM4), says Lee.

Whereas Greenpack Gold also provides the usual companion crop benefits such as competing with weeds and conditioning soil to aid crop development. Growers can therefore claim an SFI payment worth £55/ha under the companion cropping option (IPM3) for sowing it alongside any commercial variety of their choice. "That will cover the seed cost and still leave £30-35/ha for their trouble," says Lee.

"Added together, this unique mix offers a total SFI payment of £100ha in addition to the obvious benefits it delivers to both soil and crop." ■

Bayer says consistent performance under tough conditions is a standout feature of the latest Dekalb hybrid OSR variety, DK Excentric.

Buzzard against BYDV

> *There are lots of growers keen to stop using insecticides who feel genetics could be the solution.*

Insider's View: barley

Growing more comprehensive and steadfast disease tolerant and resistant varieties has become increasingly important in agriculture and with the launch of SY Buzzard, growers now have the option of BYDV tolerance in hybrid barley. *CPM* takes a closer look.

By Melanie Jenkins

In a first for barley breeding, SY Buzzard is a new six-row hybrid with tolerance to barley yellow dwarf virus (BYDV) which has been added to AHDB's Recommended List for 2024/25.

Buzzard has the Yd2 gene, which is the same gene that's in KWS Feeris, Amistar and Rafaela, says Syngenta's Ben Urquhart. "But this is the first time it's been present in a hybrid variety which is exciting for us. It means the variety has both BYDV tolerance and also all of the traits of a hybrid including grassweed suppression, a high and stable yield and hybrid vigour, both above and below ground."

Ben feels that having BYDV tolerance in a hybrid barley brings significant benefits to growers. "Since the loss of Redigo Deter (prothioconazole+ clothianidin) we've seen increasing issues with BYDV. Although we haven't had any terrible infection years recently — certainly nothing like what's been seen on the Continent — it means that if we do, there can be a big impact on yield with losses of 30-40% in some cases. So to have some protection in-built into the variety is a useful attribute for farmers to have alongside their chemical toolbox."

Artifical inoculation

Syngenta has trialled Buzzard by inoculating it using BYDV-infected aphids to create an artificial high-pressure situation. "This was undertaken alongside a variety without BYDV tolerance," says Ben. "The yield penalty was small compared with an uninfected plot of Buzzard and there was a far greater yield loss in the variety without tolerance. This demonstrates that Buzzard achieves good yields even where there's some symptomology of infection."

The trials also looked at spraying pyrethroids and found that there's around 10 days more flexibility with the tolerance than without, because the development of the virus in Buzzard was slower, he adds.

Breeding BYDV tolerance into a hybrid variety was quite a hard task for Syngenta's breeding team to undertake, explains the firm's Joe Smith. "To create a hybrid variety we require a female and male parent but both parents have to be distinct with separate criteria. There is also a sterile version of the female parent so when we introduce the male pollen, we can produce a fully fertile hybrid. What we want in the female is a shorter and earlier line whereas the male should be taller and later. If this is the wrong way around then it can be difficult to produce a hybrid," he says.

"With Buzzard, both parents have BYDV tolerance meaning the Yd2 gene had to be introduced to both the female and male breeding pools. When you bring in any new trait to a breeding programme, there can often be unexpected penalties in other areas such as yield.

"So it's been great to be able to select elite parents which when crossed to produce a hybrid, don't have setbacks in other traits because of the BYDV tolerance. However, there were lots of breeding lines to dismiss from both parent pools before reaching this point."

Now that Syngenta has introduced BYDV tolerance to its hybrid portfolio, Joe hopes ▸

According to Ben Urquhart, having some protection against BYDV in-built into the variety is a useful aspect for farmers alongside their chemical toolbox.

Syngenta BYDV trials have demonstrated Buzzard infected with the disease had only a small yield penalty compared with an uninfected plot, and there was a greater yield loss in the variety without tolerance.

▸ to extend this to other varieties as well developing different virus tolerances and resistances. "Introducing a new novel trait into a gene pool is what takes the time but once it's been established, we can really start to use different combinations to increase robustness. The next logical step is to back up tolerance with resistance by stacking or adding genes to the parents to create more robust disease packages. This'll help to manage the potential loss of chemistry as well as tailoring varieties to sustainable agricultural practices," he adds.

Agronomic approval

Agrii agronomist, Del Jenkins, first saw Buzzard in the company's trials and as a result, recommended one of her growers plant the variety on his heavy Sussex land last autumn for its BYDV tolerance. "The farm is surrounded by woodland and hedges and so it's the ideal situation for BYDV — something that's been an issue before. The crop didn't have an insecticide last autumn; as of mid-April there were no signs of BYDV and it's the most even field of winter barley I'm currently working with."

Aside from its notable BYDV tolerance, Buzzard is a high yielding variety at 103% of control, which has done well across all regions, says Ben. "It's particularly suited to the East and is pretty competitive on both light and heavy soils."

Compared with other hybrids, such as SY Kingsbarn, Buzzard's yield potential is reduced, points out Del. "Although Buzzard yields less than Kingsbarn on paper, in heavy soil situations where growers can't access land, this could actually be insignificant and Buzzard may well outyield it despite the five percentage point difference."

Agronomically, the variety stands well with a preliminary score of 8 for its resistance to lodging without a PGR and scores a 7 with a PGR. "It seems to stand very well and was noticeably slightly shorter than other hybrids in trials but this isn't to say it's a short variety," adds Ben.

"It's advisable to still take a programmed approach to PGRs applying little and often to help spread the workload and to not have to rely on ethephon to do all of the late season heavy lifting," he says. "When the ear comes out, the barley still has 50% of its growing to do, so little and often means you're constantly checking the height and building a nice strong base for yield."

Del feels that Buzzard's resistance to lodging looks good but she does have general concerns about the straw length of all hybrids. "I take a belt and braces applied, and we were about a week-10 days late with the second because of the weather.

"We've seen a little winter kill where the plants have mobilised nitrogen out of older leaves into new growth because we couldn't put fertiliser onto the crop."

Paul feels that Buzzard has potential as it ticks the right boxes with its BYDV tolerance, but says the yield has to stack up for him to commit to growing it again. "It'll have to achieve around 8t/ha and so long as it doesn't go flat, which is a worry because of the off-kilter PGR programme, it should hopefully do well."

Testing the tolerance

Buzzard was recommended to Paul Sigley, farm manager at Stern Farms, Lord Wandsworth College in Hampshire, because of the variety's BYDV tolerance.

Paul looks after the 486ha estate which includes 283ha of combinable crops. "We grow wheat, barley, oats, oilseed rape and beans, with quite a lot now in stewardship."

The estate is managed with a focus on regenerative farming with most crops now direct drilled, but Paul takes the approach of implementing cultivations and ploughing where necessary. "The soil is predominantly a clay cap over chalk meaning some of it can be challenging at times.

"Last year, for Harvest 2023, we'd had a lot of BYDV in our winter barley and when I mentioned this to my local Syngenta contact, Pete Woodford, he highlighted Buzzard's tolerance to the virus which is why I decided to try it," explains Paul.

He planted 8ha of Buzzard and 16ha of SY Thunderbolt last autumn, with the former drilled on 4 October using a Horsch Avatar. "It's gone in as a second cereal so the ground was stubble raked to provide very shallow cultivation and a bit of straw management as well as to provoke a chit on volunteers and blackgrass."

Paul has been growing hybrids for the past eight years because their vigorous spring growth helps with blackgrass control. "The weed is present and persistent on farm so we have to try to manage it and stop it from spreading."

The crop of Buzzard had a pre-emergence spray shortly after it was drilled consisting of Clayton Facet (flufenacet+ diflufenican) at 0.8 l/ha, Anthem (pendimethalin) at 2.92 l/ha and Topsail (prosulfocarb) at 2.92 l/ha.

The Buzzard established well, but Paul was conscious that, as a hybrid, it would require managing in the spring. "It's had a PGR and T1 fungicide now but these went on a bit late. I'm hoping it doesn't grow too tall and go over as I know hybrids put on a lot of straw growth from the flag leaf stage."

Paul applied 0.63 l/ha of Solatenol (benzovindiflupyr) and 0.42 l/ha of Soratel (prothioconazole), as well as Moddus (trinexapac-ethyl) and chlormequat on 13 April, and is planning a T2. "I haven't seen much disease at all or BYDV, and crops have been surprising clean considering the conditions this year.

The crop had its first dose of fertiliser on 4 March at 60kgN/ha followed by a second on 10 April at 75kgN/ha, and is due its final top up. "The first fertiliser application went on about one month behind when it normally would be

Paul Sigley feels that Buzzard has potential as it ticks the right boxes with its BYDV tolerance, but says the yield has to stack up for him to commit to growing it again.

Buzzard is the second earliest variety to mature of all the hybrids, coming in behind SY Kingston, which can help growers to manage workloads or have an entry into oilseed rape.

approach to PGR programmes and because I was worried about straw height, the crop of Buzzard I looked after had an early fungicide and PGR."

In terms of disease, Buzzard scores a 7 for net blotch which is the highest score on the RL. "Having wet weather disease resistance, especially with what we've experienced this season, is of real benefit when you can't go out and spray when you want to," adds Ben.

The variety scores 6 across all of the other diseases on the RL. In Agrii's 2023 trials, Buzzard did show a weakness for mildew and brown rust, but Del points out that neither of these diseases are a big problem in the area of the South East she manages. "I'm more focused on net blotch and rhynchosporium and Buzzard stood up well compared with the other varieties in Agrii's trials."

SY Buzzard at a glance

Yield (% treated controls)	
UK treated	102.7
UK untreated	82.1
East region treated	104
West region treated	[101]
North region treated	[102]
Grain quality	
Specific weight (kg/hl)	69.0
Screenings (% through 2.25mm)	3.2
Agronomics	
Resistance to lodging without PGR	[8]
Resistant to lodging with PGR	7.3
Straw height without PGR (cm)	[115]
Brackling (%)	10
Ripening (days +/- KWS Orwell)	-1
Disease resistance	
Mildew	6
Brown rust	5.7
Rhynchosporium	6.2
Net blotch	6.6
BaYMV1 & BaMMV	R
BaYMV2	-

Source: AHDB Recommended List, winter barley 2024/54 – [] = limited data.

Growth habit

Looking at Buzzard's growth habit, this is typical of a hybrid barley, says Ben. "We'd look to plant it at a lower seed rate to a conventional, at around 200-250 seeds/m^2 depending on the grassweed pressure and conditions at drilling. The crop will generally sit until the spring when the hybrid vigour becomes really noticeable; by February or March it just grows away especially when supported with an early application of nitrogen."

Ben suggests using a standard hybrid barley nitrogen application split 30/50/20 with the first timing to support early growth and encourage the plant to hold onto its tillers to achieve yield.

Del believes most hybrids benefit from an early application of nitrogen. "I encouraged my Buzzard grower to apply early nitrogen as this can help with specific weight which might be especially useful for Buzzard."

During the past three years, Syngenta has been conducting trials with ADAS looking at nitrogen use efficiency in hybrid barley. "This was a particularly hot topic when nitrogen prices went through the roof and what we've seen from the trials is that there's potential to cut back nitrogen inputs modestly with minimal impact on yield. However, now prices have fallen, being able to cut back just offers flexibility rather than larger cost savings.

"Although Buzzard wasn't one of the trial varieties, the four hybrid varieties we did look at were very consistent in their performance, whereas the conventionals reacted very differently to reduced nitrogen rates," he adds.

Buzzard is the second earliest variety to mature of all the hybrids, coming in behind SY Kingston. "For growers looking to manage workloads on farm this provides a good option for an early harvest and entry into oilseed rape. Plus, thinking back to the past few harvests, having a crop in the barn and not out in the field where it might be rained on is definitely a bonus."

Buzzard had its soft launch last year and Ben observed quite a lot of interest in it. "The variety fits in with the move towards sustainable and regenerative farming practices as there are lots of growers keen to stop using insecticides who feel genetics could be the solution.

Aside from its notable BYDV tolerance, Buzzard is a high yielding variety at 103% of control which has done well across all regions.

"I've spoken to one grower who's just planted Buzzard on his headlands in areas where he knows BYDV will be a risk, and another who's mixed it with a second variety as a backstop in case he couldn't spray when he planned to."

The variety will be widely available to anyone looking to grow it this year, says Ben. "I initially thought Buzzard would be a largely South West variety grown in milder areas where BYDV could be a problem, but looking at where Buzzard was grown last year, it didn't fit this pattern.

"So I think there are lots of different reasons why growers might choose it, whether it's to drill earlier to avoid missing a weather window, or to reduce or completely cut insecticide use meaning cultural controls and genetics will be key. In addition, I think it'll suit growers seeking more flexibility in their spray timings." ■

Agronomically, Buzzard stands well with a preliminary score of 8 for its resistance to lodging without a PGR and scores a 7 with a PGR.

Fit for the Future

Barley benefits

In an era where growers are looking to cultivate sustainable rotations which combine farm practicalities with economic returns, experts believe winter barley may increase in importance. *CPM* finds out more.

By Charlotte Cunningham

While the perfect formula for a sustainable rotation that encompasses productivity and financial resilience is perhaps the great unknown for many farmers, winter barley is a crop that should be strongly considered.

This is according to KWS' Dr Kirsty Richards, who says with increasing input costs and grain price volatility, many growers are looking to minimise outlay and mitigate risk — winter barley offers a wealth of management, economic, operational and rotation benefits to help to achieve just that.

"Drilled in late August and early September, winter barley can help take some of the pressure off when drilling winter wheat — the key crop on many arable farms. Given the often-challenging weather conditions at this time, that's a real benefit in ensuring the planned area of autumn crops is established successfully."

Kirsty adds that the benefit of timeliness applies through to the spring, as the crop reaches its optimum timings for T0, T1 and T2 applications approximately 2-3 weeks before winter wheat, helping to spread the workload and achieve optimum spray timings for the winter wheat.

Earlier harvesting

There's also the advantage of an earlier harvest date when it comes to winter barley, which in turn reduces the pressure in terms of combining following crops and potentially avoids harvesting delays as the weather worsens at the end of the season, she says. "Being the first of the new season cereals to be combined, winter barley also creates significant marketing opportunities as there's often a range of diverse homes for it — depending on region — and usually several off-combine export prospects.

"This frees up valuable storage and helps cash flow, while the value of the straw can provide a useful financial boost."

One grower making the most of the benefits of incorporating winter barley in the rotation is Peter Hitchcock. As well as the 750ha family farm on the Hertfordshire-Essex border, Peter is an agronomist at Prime Agriculture, looking

> *"Reliability is fundamental when we're talking about resilient, sustainable varieties."*

Being the first of the new season cereals to be combined, winter barley also creates significant marketing opportunities as there's often a range of diverse homes for it, believes Kirsty Richards.

Higher and more stable yields are among the benefits of hybrid barley, says Kate Cobbold.

after around 4000ha of crops across the county.

On the home farm, the rotation is based on combinables with winter barley a core part of the line up. "When it comes to cropping, essentially, we're wanting to minimise risk in the rotation as much as possible. We like growing straw-based crops because we know we can grow them relatively successfully as they perform well on our heavy soils. Break crops are really tricky for us, so the less of them we can grow, the better. We want every crop to give us a margin."

In terms of the typical rotation, Peter says it tends to be based around four 'white-strawed' crops. "This often looks like wheat, wheat, spring barley, winter barley and then into a break crop. The winter barley has been a mainstay in the rotation as it's the one crop which we can get in the ground and drill early, which helps to spread workloads hugely at busy times."

At the opposite end of the season, Peter also likes the fact that winter barley is an earlier harvested crop. "It's good to be able to get the combine in early when there's not much else to do and it's also a good entrant for oilseed rape. As well as this, it seems to perform consistently well and our five-year average is 9.4t/ha which we're pretty happy with."

When it comes to the variety of choice, Peter says he tends to stick with Memento and KWS Tardis. "We always opt for two-row varieties and we're looking for something that's high-yielding, strong, stiff strawed and has a good disease resistance package.

"KWS Tardis ticks all of these boxes. It's a good yielder — particularly in the East and on heavy land — it has great specific weight and good standing ability. With the weather periods we tend to get now, you just never know whether a crop is going to stay standing or not, so Tardis' lodging score helps bring a bit of reassurance.

"We did find last year when we put the combine in that there was a lot less on the floor where we'd drilled Tardis."

Peter is not alone when it comes to his enthusiasm for Tardis — the variety accounted for 40% of the declared drilled barley acreage this year, continues Kirsty.

Combo of characteristics

While it no longer holds the top spot on the Recommended List for yield, Kirsty believes it's the combination of characteristics that makes Tardis outstanding in its field. "For growers choosing a winter barley it's really important to have a combination of yield, standing power and specific weight. They have to get something to grow well, stand through to harvest and then have a good spec weight to enable the best marketing opportunities.

"I think the lodging score is another reason people have stuck with Tardis, too — it's the only winter barley on the Recommended List with a zero for lodging with PGR. Last year, in particular, I think this benefit really shone through."

Olivia Bacon, KWS UK conventional crops technical manager says the standing power of Tardis was something which was highlighted in trials last harvest too. "It was quite a high lodging year, but Tardis came through as a variety which continues to stand up well despite the conditions.

"We ran a large trial with Scottish Agronomy where we were looking at PGR programmes and different nitrogen rates, comparing both conventional and hybrids to essentially see if we could push them over," explains Olivia. "Across two sites in Scotland, Tardis was very similar in yield to competitor variety SY Kingsbarn, but Tardis had about 2.5% lodging while Kingsbarn was around 25%."

Thinking about the wider trials picture, while yield is still king, it's the whole package which makes a variety truly sustainable, believes Olivia. "We're still breeding for yield — it's always going to be key for us and that's essentially how breeders get varieties onto the Recommended List.

"However, with winter barley there are often a combination of factors required, such as good all-round agronomics and disease resistance. With Tardis, it's a

Olivia Bacon says the standing power of KWS Tardis was particularly strong in trials last harvest.

reliable variety, you know what you're going to get, and it just seems to perform well year-on-year. That reliability is fundamental when we're talking about resilient, sustainable varieties."

As for what's on the horizon for the breeder, KWS is aiming to strengthen its portfolio of varieties with the launch of its first hybrid barley into the UK market later this year.

The new range of hybrid barleys being launched as part of the #NextLevel campaign complements the existing conventional programme, and hybrid crops product manager Kate Cobbold says there's a place in the market for both. "Depending on the end market and local growing conditions, farmers have options for finding the most appropriate barley solution and that's the real benefit of the KWS position.

"In a typical year, 450,000ha of winter barley is grown in the UK each year, of which roughly 25% is hybrid barley, so we see huge opportunities in the future with the crop bringing many benefits to growers."

Firstly, there's the potential for higher and more stable yields, continues Kate. "Farmers are increasingly under pressure in terms of increasing production costs and volatile grain markets and a good way to mitigate against these pressures is to have varieties that deliver high yields consistently year after year.

"Increased productivity also helps with sustainability as more efficient use of land and resources is made."

Growers are also looking for varieties with robust disease resistance packages and good grain quality, and hybrid varieties can excel in this area too, she points out. "As farmers increasingly battle ▸

Inys is set to be the first hybrid barley to be launched in the UK by KWS.

Looking at its statistical performance so far, Inys was the highest yielding winter barley in both its NL1 and NL2 trialling years.

▸ with blackgrass, hybrid barley can help reduce grassweed pressure. This is because it has a larger root system than conventional barley and gets going very early in the spring which allows it to better compete with grassweeds.

"While hybrid barley is a useful option for growers to help reduce blackgrass pressure and minimise seed return, it can't be solely relied on its own and must be a part of an integrated approach in order to combat blackgrass."

Hybrid barley is also a great addition to crop rotations, usually being the first cereal to start harvest, she adds. "Thanks to its early harvest maturity, hybrid barley is an ideal crop to sow before OSR, giving farmers the opportunity to drill earlier and spread the workload during a very busy time of the year."

Fit for the Future

In this series of articles, *CPM* has teamed up for the seventh year with KWS to explore how the cereals market may evolve, and profile growers set to deliver ongoing profitability. The aim is to focus on the unique factors affecting variety performance, to optimise this and maximise return on investment.

It highlights the value plant genetics can now play in variety selection as many factors are heavily influenced and even fixed by variety choice.

KWS is a leading breeder of cereals, oilseeds, sugar beet and maize. As a family-owned business, it's truly independent and entirely focussed on promoting success through the continual improvement of varieties with higher yields, strong disease and pest resistance, and excellent grain quality. We're committed to your future just as much as you are.

Although a newcomer to hybridisation in barley, KWS has years of experience of hybrids across sugar beet, maize, rye and OSR with the move into barley being a natural progression, notes Kate.

"Our history with hybrid breeding stretches back to the 1960s with maize and we've been steadily and successfully adding new hybrid crops and varieties to our portfolio since then. Our approach is that when we do commit to make something happen, we don't have to be first, but we do want to do it properly and bring genuine improvement and opportunities to growers.

"Barley is one of the most important cereals crops worldwide and KWS has a long history of successfully breeding exceptional varieties."

Yield advantage

A series of UK-based field trials is showing some exciting benefits for Inys — the first hybrid barley to be launched in the UK by the company, adds Kate.

"There seems to be a definite yield advantage for Inys over the leading hybrids currently available in the UK with good yield stability plus we're seeing thicker plant stands and deeper rooting, which is exactly what we were hoping to see.

"There are indications that Inys also has a much more vigorous growth habit in the early stages of development with up to 40% greater ground cover over winter being seen in some instances."

Looking at its statistical performance so far, Inys was the highest yielding winter barley in both its NL1 and NL2 trialling years. "Its yield is very strong in the West ([114]%), with high yields in the East (109%) and North ([106]%) too," says Kate.

"Coupled with a high untreated of [93]%, Inys is a step up in yield from all current hybrid barley varieties."

This is teamed with Inys' good all round disease profile with a 7 for mildew and 6 for rhynchosporium, net blotch and brown rust in NL trials. "What's more, it's early to mature ([-1] days +/- KWS Orwell) making it an ideal entry for OSR and delivers a good specific weight of 69.6kg/hl. It has also shown no lodging in the two-year NL report 2023 and low levels of brackling (7%) compared with other hybrids.

"Inys is a great first variety with significant potential and there are more KWS hybrid barleys in NL trials, which will hopefully be commercialised over the coming years in the UK." ■

Addressing the future

Cereals Event preview

Switching things up, the Cereals Event has a new format this year aimed at providing a greater focus on regenerative practices, as well as continuing with the staple favourites such as the crop plots and soil hole. *CPM* takes a look at what's been planned.

By Melanie Jenkins

Although it might not seem as if spring has sprung yet, the summer show season has almost arrived and that means the Cereals Event will once again be opening its gates, this year at a new location and with a different format.

This year's event will be held at Bygrave Woods, Newnham Farm in Hertfordshire on 11-12 June, alongside its new co-hosted event DirectDriller@Cereals.

Hosted by Alex Farr and his cousin Edward Wainright Lee, both events will be held on the Farr family's 45ha outdoor event space – one of the 900ha arable farm's diversifications complete with established trackways and amenities. Its 10 years as a large event venue means it should be well-placed to host the 20,000+ visitors the events are set to attract.

"We love welcoming people to Bygrave Woods — it's great to be the host farm for Cereals after attending it during the years," says Alex. "The event offers such breadth of information and technology; the progress in robotic technology is always something that gets our attention — and it never gets old meeting new and old friends."

No brainer

When the cousins heard that the event was looking for a new site they jumped at the chance to host it. "With our licenced festival area, we were well placed to host, and although some arable land has been used for the crop plots and soil hole, these will just go back into production after the event," explains Edward. "Cereals is one of the main farming events of the year so it's fantastic to be able to host it. It's somewhere you can go and have everything all in one place as well as providing a huge breadth of information."

As ever, Cereals will showcase the latest developments in arable agronomy, machinery, technology and business advice; with more than 450 exhibitors, 200+ live demonstrations, two days of seminar programmes, and several hundred individual crop plots on display.

New to 2024 is the co-located event — DirectDriller@Cereals. Co-hosted by Cereals and *Direct Driller* magazine, its theme is 'Regenerating farm profit', and the focus is on how regenerative agriculture can make large-scale arable farms more commercially successful. It'll comprise a full conference programme including seminars curated by BASE UK, and a schedule of demonstrations (see page 60).

Being co-located, DirectDriller@Cereals aims to offer visitors access to a much wider range of farming focuses. "Cereals wanted to cover regenerative agriculture in much more detail given the impact of the sustainable farming incentive (SFI)," says Clive Bailye, arable farmer and publisher of *Direct Driller* magazine. "*Direct Driller* magazine and BASE UK are able to bring together topics, speakers, and demonstrations that will help large-scale arable farmers to implement these ideas in a way that will directly impact their farm profit."

Also new to 2024 is the Seed to Shelf stage – a fresh take on the Cereals main stage. This KWS-sponsored platform will host seminars designed to trace the arable supply chain from seed to retail, offering attendees insights from plant breeders, agronomists, farm contractors and farmers, through to grain marketers, processors, retail brands and retailers. The stage will also host a political welcoming session.

"We understand the critical role the arable supply chain has in producing sustainable food sources that feed our country now and for future generations, and we're delighted to be the sponsor for the Seed to Shelf feature at Cereals 2024," says KWS' Dr Kirsty Richards.

The programme will kick off with opening remarks from NFU president Tom Bradshaw and Minister of State for Food, Farming and Fisheries, Mark Spencer, followed by a panel discussion on regenerative agriculture and the future of crop breeding.

Among the panellists is Bill Angus of Angus Wheat Consultants, who says the topic of regenerative agriculture always makes for a contentious debate due to the many interpretations of the phrase. "My definition is that regenerative agriculture is what farmers should have been doing for the past 30 years or so but were incentivised not to do it. So now, we have to repair the damage of past agricultural policies."

Remaining at the heart of the show are the crop plots, expanded by a further six new exhibitors to put even more varieties on display. The Ceres Rural-curated winter wheat and barley feature will also return, offering a spread of popular winter wheats — groups one to four, and a collection of two-row and six-row malting barley varieties. The plots provide a unique opportunity to see a ▶

Remaining at the heart of the show are the crop plots, expanded by a further six new exhibitors to put even more varieties on display.

New to 2024 is the KWS Seed to Shelf stage which will host a political welcoming session on the first morning of the event.

▸ selection of leading Recommended List (RL) varieties side-by-side with experts on-hand to guide and advise across both days.

Over on the Senova stand, visitors will find a multitude of new varieties. The firm is showing three new winter wheats, three new winter barleys, a new winter oat and its latest break crop varieties at the two-day event. "We're showcasing varieties that have durable resistance and tolerance to pests and diseases, which will allow growers to complement cropping with new SFI actions and reduce their reliance on artificial inputs," says Senova's Tom Yewbury." We'll also be discussing the potential for pulses both as a source of home-grown protein and as companion plants in cereals."

A staple of the show, the 20m-long NIAB Soil Hole will return, giving visitors a unique insight into cultivation effects and crop growth below ground. ■

Event information

The Cereals Event will be held in Hertfordshire on 11-12 June 2024. Car parks open at 6.00am; gates open at 7.30am when caterers open for breakfast; stands and features open at 8.00am. Location: Bygrave Woods, Newnham Farm, Hertfordshire, SG7 5JX. Tickets are available online at www.cerealsevent.co.uk.

Cereals Event ticket holders have access to all areas and demonstrations except the DirectDriller@Cereals Conference Theatre, which is ticketed separately and includes all-day hospitality, food, and parking.

Seed to Shelf seminar line up

Below, *CPM* has picked out some highlights from across the Seed to Shelf seminar programme. The full programme can be found online.

Session	Date and time	Speakers	Agenda
Welcoming remarks	11 June 09:00-9:30	• Mark Spencer, Minister for food, farming & fisheries, Defra • Tom Bradshaw, president, NFU	Opening remarks from the secretary of state and the NFU president.
Regenerative agriculture and the future of crop breeding	11 June 09:30-10:15 & 12 June 9:00-9:45	• Emma Gillbard, deputy arable editor, *Farmers Weekly* • Kim Hammond-Kosack, leader of Functional Genomics, Wheat Pathogenomics, WGIN and PHI-base, Rothamsted Research • Bill Angus, co-founder, Angus Wheat Consultants Ltd • Henry Barber, plant breeder, KWS • Anthony Hopkins, head of policy & business management, British Society of Plant Breeders	Panel discussion covering key topics relative to the future of plant breeding including the importance of regenerative agriculture to breeders, the place for heritage genetics, using genetics to increase tolerance to pests, diseases and weeds, as well as thoughts on genetic modification.
Crop protection, nutrition and agronomy update	11 June 10:15-11:00 & 12 June 9:45-10:30	• Richard Lawrence, editor, *Agronomist & Arable Farmer Magazine*	An update on the latest advances in crop protection, nutrition and agronomy.
Getting the next generation working in agriculture	11 June 12:30-13:00 & 12 June 12:00-12:30	• Guy Moreton, executive chair, Morepeople	Panel discussion headed up by recruitment specialist Guy Moreton looking at how to recruit the next generation across the whole supply chain.
GPU Compute in Agriculture: Yields up to 201% over 4 years	11 June 13:00-13:30 & 12 June 12:30-13:00	• Josh Riddett, chief executive, EasyCrypto	Open discussion around how farms can diversify to GPU compute and generate passive income. Find out about the cryptocurrency sector as well as the operations and earnings of operational sites.
What's happening in global grain markets and where next for UK prices?	11 June 14:30-15:15 & 12 June 14:00-14:45	• Charlie Reeve, business reporter, *Farmers Weekly* • Chris Wood, senior trader - Cefetra	An update from grain traders and market experts – AHDB, Cefetra UK, and United Oilseeds - on the latest developments in global grain markets and how this is influencing farmgate prices in the UK.
Green premiums: What are their future prospects?	11 June 15:15-16:00 & 12 June 14:45-15:30	• Andrew Meredith, editor, *Farmers Weekly* • Brin Hughes, agronomy manager - Richardson Milling, BOBMA • Richard Broadbent, president - Bairds Malt • Simon Penson, technical director - ADM	Advice and an update from speakers from the oat, barley and wheat markets about green initiatives and how growers can be incentivised to producer greener crops in the future.
From seed to shelf: BrewBoard Case Study	11 June 16:00-16:45 & 12 June 15:30-16:15	• Nick Tregidgo, lead brewer & microbiologist, BrewBoard • Rebecca Gee, grain procurement manager - Crisp Malt • Chris Borrett, agricultural merchant & director - Adams & Howling	A special case study following beer brewing from variety selection through to the retail shelf.

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naturenatters

by Martin Lines

Hitting the ground running

I've just returned from a weekend in London, supporting my daughter who was running her first London Marathon as well as the thousands of others who were also taking part. On the journey home I began to reflect on the achievements of all those who crossed the finish line.

Running a marathon from A to B is much like farming and the current agricultural transition from one payment structure and focus to another. As a farmer, the big difference is – we're not sure where or if there is a finishing line…

All the groups of runners assemble at different points to start their race. You have the elite athletes that set off at pace and with determination to be the first to cross the line. Equally, many farms have been nature-friendly for generations and farming regeneratively in tandem with nature and sequestering carbon.

Then, there are the thousands who've run many races in the past and know exactly what to expect — fast runners but not professional athletes and who are hoping for a personal best. Of course there are many experienced farmers who use fewer inputs, restore some habitat for nature, plant trees and think ahead.

And then there's the tens of thousands of people setting off in large groups to complete the race in their own personal best times, some walking the course because that's their limit – a very slow pace but determined to cross the line.

In agriculture, some farmers require advice on climate resilience and helping nature but have to start somewhere. They're perhaps not sure what their farm business plan is yet but are learning on the job because they know they must.

For the marathon, everyone comes together from different backgrounds and opportunities – some are less able, some have personal challenges, but they all are there for the common goal of crossing the line. As a spectator, we get to watch and cheer on the runners.

Very soon after the masses start coming past we see pacesetters with flags aloft, stating the time in which they'll complete the marathon: "If you tuck in and follow me, I'll get you across the line in four hours." In agriculture, maybe it's the agronomist that'll guide farmers through the steps they require to cross the line?

Some runners have sponsorship from the latest flashy brands to help them in their training. They're bombarded with adverts for the latest technology trainers, sports drinks and supplements that they simply must have to complete the race. In farming we have new pesticides, GM varieties, expensive new technologies and upgraded machinery.

These might seem like quick fixes, and there may be a psychological benefit, but at what cost? Do these things really make for a better marathon runner or in our case, are these tools sustainable solutions?

Now the crowd gets very noisy, cheering the runners, shouting out names and encouraging those who look like they're struggling. There are loud cheers as those dressed up in costumes go past, those with fridges and other items attached to themselves. Runners, cheering other runners.

This is just like the farming communities who show their support — the farm shop is busy, the school visit proves a success, volunteers come and help with the tree planting.

In the real-life farming marathon, most farmers are running as fast as they can but may not have made the right preparations for the race they now find themselves in. They recognise where they're heading but may be derailed and dazzled by adverts and products available to make their race quicker and easier…but at whose expense?

Are these sticking plasters? There are farmers that haven't prepared and they begin to raise their voices to express how difficult it is and that it may not be achievable. They're not sure if they even want to be in this race with no end.

But, they'll be encouraged along by a crowd of supporters and the willingness of everyone to help each other – we're all on the same journey after all. Runners cheering runners, farmers cheering farmers, communities coming together in support.

Our agricultural system is transitioning to deliver food production alongside climate resilience and nature recovery; which runner are you in this race?

Martin Lines is an arable farmer and contractor in South Cambridgeshire with more than 500ha of arable land in his care. His special interest is in farm conservation management and demonstrating that farmers can profitably produce food in harmony with nature and the environment. He's also chair of the Nature Friendly Farming Network UK.
@LinesMartin
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Running a marathon is much like farming.

Doing the right thing

SFI balance

With the government demonstrating it can easily move the goalposts when it comes to SFI, concerns are being raised regarding potential abuse of the system. *CPM* shares perspectives of those at the coalface.

By Janine Adamson

Back in March, Defra revealed that a small number of producers — around 1% of those who applied for SFI in 2023 — entered 80% or more of their farm into actions that take land out of food production.

Alongside this it was explained that: “While flexibility and freedom of choice are important features of SFI, this goes further than is necessary. And, in the context of economic volatility and challenging weather conditions, there’s a risk that this could become more of an issue.”

As a result, a cap has been enforced on six of the actions, limiting them to no more than 25% of a farm’s total land. The restrictions apply to IPM2 (flower-rich grass margins, blocks or strips), AHL1 (pollen and nectar flower mix), AHL2 (winter bird food on arable/horticultural land), AHL3 (grassy field corners and blocks), IGL1 (improved grassland field corners or blocks out of management) and IGL2 (winter bird food on improved grassland).

The over-riding message behind Defra’s cap announcement was that government wants to protect and improve the environment, food production and food security, without SFI being used in a negative way.

Rule change

And although the vast majority of growers haven’t gone as far as the 1% cited by Defra, SFI consultant Paul Pickford says he has heard mutterings of somewhat spurious activity. “Equally, the government has shown it’s quick and easy to change the rules, so it’s important to not do the wrong thing or abuse the system.

“It is a concern – we don’t want to mess this up. It’s far from a perfect scheme but it has great potential, however for many, it’s weighing up doing the right thing versus finding a way to survive.”

Wildlife farming consultant, Marek Nowakowski, believes as long as the pendulum keeps swinging from one extreme to the other, farmers will continue to be caught in the middle. “In my opinion, the problem with the old HLS/ELS scheme was the way the RPA interpreted the prescription as they rigorously carried out inspections to the letter with a lack of practical interpretation and understanding.

“There was little flexibility within that which meant farmers were often stung for misinterpretation – which could be attributed to the use of non-farmer-friendly prose and a disconnect between science and on-farm practicality,” he explains.

“Whereas now, SFI offers a very relaxed approach and farmers have been left alone to get on with it. There’s now too much freedom which has left many floundering; farmers require guidance on matters relating to best practice in delivering biodiversity gains.”

Paul Pickford agrees that there are obvious aspects of SFI which have been left vulnerable to exploitation, whether ▸

The government has shown it’s quick and easy to change the rules so it’s important to not do the wrong thing or abuse the system, says Paul Pickford.

According to Paul Wilson, there's simply no incentive to do more at the moment.

▸ that's knowingly or not. "An example of poor implementation would be establishing a winter bird food crop (AHL2) in July/August following winter barley or an early harvested winter wheat.

"Planting at this point in the season means the crop flowers late, produces little food and therefore is of little benefit to the birds. Whereas the action states it should produce nectar/pollen in the summer as well as seed in the winter," he explains.

Furthermore, he says the reason why this particular action pays well is because it's meant to compensate for a lost harvest. "It's a big number so is very attractive but it must deliver on its purpose and fill the wildlife hunger gap. Of course, this action is now limited as part of the 25% cap."

However, Alcester farmer Paul Wilson hasn't taken this approach, instead opting to plant small amounts of AHL2 on less productive areas. "We're keen to achieve the desired outcome. It's proven that it hasn't taken long for the government to catch onto poor practice. The beauty of SFI is its flexibility and we don't want to lose that," he says.

"There's also less paperwork than before and there seems to be less bureaucracy. Yes we want to max it out as far as we can to replace BPS, but the more it's abused, the greater the chance of more red tape again. That's exactly what we don't want," stresses Paul Wilson.

Another example watch-out from Paul Pickford is weighing up companion cropping at £55/ha (IPM3) versus a multi-species cover crop at £129/ha (SAM2). "To deliver on SAM2, growers have to sow a mix containing at least two species from one or more of the stipulated plant families. It also has to be sufficiently well-established to protect the soil surface for the whole of winter.

Marek Nowakowski believes as long as the pendulum keeps swinging from one extreme to the other, farmers will continue to be caught in the middle.

"Some might decide to use a cash crop as one of these species, and thus claim the higher payment of SAM2 rather than it being a companion crop. Whereas this might comply on paper, it's not necessarily the best application of a multi-species cover crop in terms of soil

health benefits," he explains.

According to Paul Wilson, it's currently too easy to simply tick a box rather than go the extra mile. "As farmers we want to do a good job, but from a commercial perspective, it involves spending the minimum to deliver an adequate outcome. There's simply no incentive to do more at the moment," he says.

In agreement, Paul Pickford says it's a missed opportunity to not reward based on results and that he knows plenty of farmers who would take pride in doing a great job.

Sliding scale payments

Marek believes the answer lies in a sliding scale. "Not only should there be adequate guidance to ensure correct interpretation and delivery, but payments should be flexible. It doesn't have to be difficult to police either — technology is now available through phone apps for growers to self-report and monitor which would enable better rewards for successful delivery."

Equally, Marek has concerns for the future governance of SFI if questions continue to be raised. "The Office for Environmental Protection (OEP) was established when the UK left the EU as a means of monitoring our environmental deliverables.

"OEP is a non-departmental public body sponsored by Defra — I should imagine that it won't take long for this office to start proactively monitoring farmers and their application of SFI," he warns.

However, Paul Wilson stresses that he believes most farmers will be using SFI to make more of the least productive areas of land, rather than going all-in. "We've also opted for the options which seem easiest to establish and be successful to help to grow our confidence. Taking this approach has also revealed the most productive cropping land which can only be a positive thing," he says.

But conversely, Paul Wilson understands why some might have pushed things too far. "We're geared up to be a commercial farming business so have used SFI to streamline activity and make the most of what's left. However, I can understand other perspectives and the temptation to use SFI as an 'out' particularly this year," he adds.

Overall, Paul Pickford believes SFI is an improvement on former environmental schemes but worries that without a collective aim to do the right thing, progress may go backwards.

He says advisors will be playing an important role in decision making. "SFI was designed to be undertaken by farmers but in reality, most do require some help to navigate through it all. But for some of the options such as no insecticide (IPM4), many are already operating that way which makes it an easy win," comments Paul Pickford.

And if as with many government policies, SFI ends up on the cutting room floor, Marek fears lessons learned won't be passed on. "The government has invested more money into this than ever before but it's uncertain why we had to start completely from scratch.

"There has to be a meeting of minds to go beyond the food-farming-wildlife disconnect we currently find ourselves in. We have to pass on knowledge through generations or through each scheme, to ensure the best parts of what we've learnt will continue," he says.

"We will get to a place where food production and wildlife exist harmoniously, but it just has to happen a little quicker, not helped by the fact policy is continually torn up and re-done. It's so possible to achieve, I'm frustrated because the science shows us it's possible to have your cake and eat it," concludes Marek. ■

Demo for days

Cereals Event preview

This year's Cereals Event is lined up to present a jam-packed ensemble of working demonstrations. *CPM* explores what the event has to offer for all of those keen to see the latest innovations in machinery and technology.

By Melanie Jenkins

On the other side of the Cereals Event coin, organisers have promised more than 200 machinery demonstrations as well as a packed sprays and sprayers line-up.

This year's event is set to bring with it an expansion of demonstration areas, more working demonstrations from house names in machinery as well as robotic, automation and drone manufacturers. The Drill Demos and NAAC Demo arena and the Syngenta Sprays and Sprayers Arena will showcase the latest precision technology, innovations in land preparation, establishment, and crop protection.

And back by popular demand is the Isuzu Off-road Driving Experience — a purpose-built off-road course for visitors to get into the driving seat and experience all the capabilities of Isuzu's latest vehicles.

"This is one of Cereals' biggest years for demonstrations," says event manager, Alli McEntyre. "The co-located DirectDriller@Cereals adds even more working demonstrations to the line-up."

So what can visitors expect to see across the varied working demonstration areas on 11-12 June?

> *"Ultimately, growers can achieve better results from reduced overall product use."*

Agriweld will showcase two low disturbance cultivators — the Multi Till 5T 3m rigid model and the Min Disc 3m rigid model — on its working demo plot close to its stand.

The Multi Till 5T offers a step change in seedbed preparation and efficiencies, according to company owner, Dean Foster. "It can go into most conditions and produce a good seedbed in one pass." The demo will show how low disturbance cultivation can help overcome challenges like moisture loss and surfacing of blackgrass seed.

Direct drilling fans

Visitors interested in direct drilling can visit the Maschio Gaspardo demo areas to see a range of machinery in action — including its flagship pneumatic seed drill, the Gigante Pressure Direct Drill.

Available in 3m, 4m, 5m and 6m models, the drill features disc coulters spaced at 150mm or 180mm as well as depth gauge wheels, and independent seed press wheels to optimise seed-to-soil contact.

For those considering their next steps in drainage, the National Association of Agricultural Contractors (NAAC) Land Drainage Hub has talks and demonstrations lined up to provide technical and practical advice. "Increasingly, farmers are assessing more substantial and long-term drainage solutions to improve soil condition and resilience, to reduce the risk to crops from extreme conditions like flooding and drought," says the NAAC's Jill Hewitt.

This year's NAAC drainage demos will involve the display and static running of two pieces of contractor-operated drainage machinery — a 13.8m long by 3m wide drainage trencher and an 11.2m long by 3m wide drainage plough.

With robotic and autonomous technology gaining traction year-on-year, the AgXeed demo area will see the return of the AgBot 5.115T2. An autonomous solution for high-capacity work on broad arable land, the 156hp AgBot has been designed to replace a 160hp manned tractor — where high-value crops are grown and/or there are extreme shortages of labour.

On soil-preserving crawler tracks, the AgBot 5.115T2 will be demonstrated with an Amazone 3m Cenio cultivator. But it's able to handle a host of cultivators, seeders, spreaders, and sprayers to carry out a spectrum of field work.

Visitors will also be able to find out how connectivity can aid their fleet and business at the Case IH demo area. "We'll be showcasing a wide variety of tractors and harvesting equipment from across our range including the Puma 260 CVXDrive," says the firm's Neil Macer. "But something very special at Cereals for us will be our UK unveiling of the much-anticipated 260

Demonstrations

Visitors can expect to see the following list of exhibitors participating in demonstrations:

Working demonstrations	DirectDriller@Cereals Drills Arena	Syngenta Sprays & Sprayers Arena
Agriweld	Aitchison	Amazone
AgXeed	Claydon	Bargam Agriculture
Autonomous Agri Solutions	Dale Drills	Bateman
Case IH	Horizon Agriculture	Berhoud
Hardi	John Deere	Chafer
Maschio Gaspardo	Maschio Gaspardo	DroneAg (robotic demos)
NAAC	Moore	Fendt
New Holland	Novag	Hardi
SDF Farming Technology	Simtech UK	Househam
Merlo	Weaving	John Deere
Isuzu	WOX Agri Services	Knight
	Bednar	Kuhn
		SAM crop sprayers

The Syngenta Sprays and Sprayers Arena has long been a shop window for the latest innovation and technologies.

series combine."

The Syngenta Sprays and Sprayers Arena has long been a shop window for the latest innovation and technologies, with this year promising a display of new developments in pioneering precision application practices.

These new developments could herald a step change in approaches to agronomy decisions and sprayer technologies, according to Syngenta's Harry Fordham. He believes that precision application and artificial intelligence are opening opportunities to be far more targeted in product application for more specific treatments.

"Ultimately, growers can achieve better results from reduced overall product use. The immense potential of precision application includes innovative concepts of satellite mapping with variable rate treatment, prescription application, optical sensor spot spraying, and drones — along with other techniques," says Harry.

In the demonstration arena, more than 10 manufacturers will be showcasing their kit including Amazone which will also have its new Pantera 7004 self-propelled sprayer on its stand. The Pantera has a variable front and back track adjustment and self-levelling suspension, along with an 8000-litre UX 7601 — which will be used to demonstrate the functionality of AmaSelect individual nozzle control technology, alongside AmaSelect Row, AmaSelect Spot, and CurveControl.

"Our aim at Amazone is to provide responsible and sustainable spraying technology which maximises chemical efficacy and minimises input costs," says the firm's Simon Brown.

Fendt will also be returning to the arena with the Fendt Rogator 600 self-propelled sprayer. "The Fendt Rogator 600 continues to be popular among farmers and contractors alike, with various boom widths, axle configurations and two ride heights available across the range," says Fendt's Ed Dennett.

"The MY24 model features recent developments including improved nozzles, plumbing, and easier options for tank cleaning, which are all aimed at maximising uptime and output without compromising on the job," he adds.

Triple threat

A trio of sprayers from John Deere will be making their way around the arena at this year's show including the R740i 24m trailed sprayer, the R9620 36m trailed sprayer, and the 340M self-propelled sprayer.

This'll be the first large outing for the 340M, says the firm's Mark James. "All three of the machines we're showing have our PowrSpray dual-circuit solution system with benefits including fast filling for a quick turnaround and more hectares sprayed per day. They also all feature our in-house developed individual nozzle control system, reducing overlaps and misses to the minimum, helping to reduce input costs."

Kuhn will be showing the benefits of its Metris 4102 trailed ▸

▸ sprayer which is claimed to offer users increased output and technology to improve application uniformity.The sprayer has a 4100-litre polyester tank featuring a deep sump, offering a low centre of gravity. Application is controlled via Kuhn's Diluset+ system which gives users the benefits of semi-automated filling with a pause mode, in-cab display, and partial rinsing of the sprayer from the tractor.

The winner of this year's Syngenta Farm Sprayer Operator of the Year (FSOOTY) will once again be crowned in the Syngenta Sprays and Sprayers arena on the first day of the event.

"This prestigious award recognises the professionalism of sprayer operators across UK farms," says Syngenta's Iain Lindsay. "Past winners have demonstrated their skills and expertise in every area of crop spraying." ■

Seed to Shelf seminar line up

Below, *CPM* has picked out some of the machinery-focused talks from across the Seed to Shelf seminar programme. The full programme can be found online.

Session	Date and time	Speakers	Agenda
Farm to fork: How machinery can help growers meet sustainability targets	11 June 11:00-11:45 & 12 June 10:30-11:15	● Matt Tilt, editor, *Farm Contractor & Large Scale Farmer Magazine* ● Olly Harrison, Lancashire farmer and YouTuber ● Stephen Howarth, council secretary, Agricultural Engineers Association ● Simon Brown, managing director, Amazone Ltd ● Nigel Honeyman, harvesting marketing specialist, New Holland Agriculture	A panel discussion on machinery developments and how these can help growers meet the growing number of requirements to farm more sustainability. The Q&A part of this session will also give visitors an opportunity to speak directly to manufacturers regarding what they need from machinery of the future.
Do the economics of using a contractor stack up?	11 June 11:45-12:30 & 12 June 11:15-12:00	● Jill Hewitt, chief executive, NAAC ● Matt Redman, Matt Redman Agriculture	Advice from the experts about how to assess if a farm business could benefit working with a contractor and the key things to consider.
Efficiency is king	11 June 13:30-14:30 & 12 June 13:00-14:00	● Jeff Claydon, chief executive, Claydon Drills ● Harry Middleditch, farm manager – D F Middleditch & Son ● Luker Sayer, content manager, YAGRO ● Edwin Van Leeuwen, head of product – Yagro	An open discussion around how both software and hardware can help arable enterprises maximise every hectare. Harry Middleditch will share some bots-on-the-ground experience.

Investing in the future

Claas

In 2013, Claas set out on a mission for its long-term future by fully redeveloping its UK headquarters and through the inception of its own training academy. *CPM* visited its Saxham site to see the fruits of its labour.

By Melanie Jenkins

Claas has a vision for the future, one that is both long-term and customer focused. With the opening of its redeveloped UK headquarters at Saxham in Bury St Edmunds in 2020, the firm has put money on the table to show its faith in the long-term prospects of UK agriculture.

Upon first seeing Claas' multi-million pound structural investment, it's clear to see the company could almost fit in among the many behemoth skyscrapers of Canary Wharf, with the firm's UK and Ireland CEO, Trevor Tyrell describing it aptly as a 'glass cathedral'.

But the new building is more than just an investment for Claas' future, it's also steeped in the company's past, with owner Catrina Claas, still farming a stone's throw up the road.

The site was originally purchased by the Mann family in 1950 to operate as a Claas dealership, and every year of that decade it expanded as the business grew. This included the acquisition of three ex World War II aircraft hangars, which were altered over time to suit the requirements of the business but were due an upgrade.

New site design

So in 2013, Claas hired an architect to design a building for the future, explains Trevor. "In 2014, the new used machinery centre was opened where one of the old hangars stood, this was followed by a training academy centre in 2016 and then by autumn 2020 the larger site was completed. This included a parts warehouse servicing the UK and Ireland, a repair and service workshop, a cleaning area for export and Claas UK's offices and showrooms. Manns still has a dealership on the site, and it's one of Claas' biggest dealerships, turning over £25-30M."

Due to Covid, the official opening, which had been intended as an on-site celebration, was moved online, but now the site is fully open and welcomes numerous visitors every day. "Overall, this has been a €25M investment which we hope will still be here in 100 years," says Trevor.

Although he plans for this investment to have longevity, Trevor also sees it as a way for Claas to adapt to the changing industry. He acknowledges the impact that climate change is having on agriculture as well as ▸

> *"Working in our industry isn't something that's generally encouraged in schools, so it's something we have to undertake ourselves."*

Claas Customer Experience Centre brings 15-20 customers to the site each day to provide them with a technical perspective.

Customers, mechanics and apprentices visiting Claas' Customer Experience Centre can drive tractors, tele- or material handlers or wheeled loaders on a 365-day purpose-built course.

Claas opened its newly refurbished training academy in 2017, consisting of seven workshops and 10 classrooms, and it now welcomes 16–18 year olds who join Claas dealerships as apprentices.

▸ the shift brought about by Brexit, but also feels there's a progressive move from larger to small machines.

This movement, alongside what the firm has felt to be a change in the show circuit, is what led to the development of the on-site Customer Experience Centre.

For anyone who had a farm toy set as a child, Claas' Customer Experience Centre is likely to be a dream come true, as it's essentially a life-sized version. Unlike a real farmyard where the inexhaustible 'to do list' pervades the joy of driving around big machines for the sake of it, the Customer Experience Centre reintroduces the fun to operations that might otherwise have become ordinary.

Be that moving around a pile of rubber pellets (in place of maize silage) and making straight lines in giant sand pit (imitating a cultivated field) or driving a tractor and trailer over an artificial ramp, all while presenting Claas' latest technology and machines to customers.

"The Customer Experience Centre allows us to welcome 15-20 customers to the site each day so that we can show them our support centre and provide them with a technical perspective. It means every single apprentice, mechanic and customer that comes here can drive our tractors, tele- or material handlers and our wheeled loaders," explains Trevor.

Test area

The 365-day, all weather test area includes a CMATIC driving track, a telehandler experience area, a clamp for wheeled loaders and a GPS digital steering area. "We have groups in four days a week from the UK and Ireland and incorporate this with a stay at a local hotel and a brewery tour or a visit around Bury St Edmunds to provide an all-round experience," he says.

In addition to improving customer experience and developing buildings aimed at lasting for generations, Claas is actively investing in the mechanical engineers of the future by becoming an authorised school complete with Ofsted inspections.

Establishing Claas' training academy has been a highlight for Trevor. "One of the biggest issues we have in our industry is finding young people who want to go out and service machines. Working in our industry isn't something that's generally encouraged in schools, so it's something we have to undertake ourselves."

To do this, Claas opened its newly refurbished training academy in 2017, consisting of seven workshops and 10 classrooms, and it now welcomes groups of 16–18 year olds who join Claas dealerships as apprentices. "We're an officially registered technical college with Ofsted inspections to ensure we're meeting the educational standards, both in terms of the curriculum and safeguarding," says Trevor.

As of September 2024, there'll be 100 apprentices in training at the facility, with 20-30 students per class, working on site for three weeks at a time. There are four different trainers whose full-time role is to educate the students, with the aim of having a full contingent of a total of 120 students at one time, consisting not just of mechanics but also parts and sales reps.

In the past, students would have attended external colleges and might not have visited the Claas site until their fourth or fifth year of study, he explains. "This means they wouldn't have had access to the facilities or range of machinery that we have on this site. But now we have students at this facility, they get to work on the most up-to-date machines as well as those which genuinely require a service or repairs through our workshop. It's a great way for them to get hands-on experience so that once they're back at the dealership, they can operate as a trained mechanic."

This set-up also allows Claas to shorten a student's training to become a master mechanic by around three years because they're getting all of the NTA Level 3 schooling through the academy. "The academy acts as the first step in their technical career and will take students from mechanical tools right through to using the most advanced technology," says Trevor.

The academy is licensed to provide ▸

New launches

With the return of Agritechnica last November, Claas celebrated 50 years of its Jaguar forage harvester as well as launching its Xerion 12 series tractors which is all part of the firm's drive for an increasingly digitally linked operation. "The first of these machines have already been rolled out in Australia and Canada and there's one on its way to the UK," says Trevor.

But the latest innovation from the firm is its Claas Connect system which Trevor hopes to roll out to every customer's pocket, farm office and machines. "Claas Connect means everything you do with your machine will come through to your mobile phone and your mechanic can all have access to relevant information for a machine if given permission."

The digital system brings together machine management, service planning and licensing, along with yield and application maps and documentation to a single cloud-based platform. "Our new strategy going forward is very much about the digital business," highlights Rob Fillingham. "Our everyday life is becoming increasingly digitised, bringing you closer to the manufacturer and putting everything at your fingertips, to improve the overall experience."

Claas has also partnered with Amazone to create the Advanced Automation and Autonomy project. This involves operating an Amazone cultivator behind an Agxeed robot in a bid to further advance automation in agriculture. "Claas is a shareholder in Agxeed because we want to see this level of technology on farm in the future, and if we want to achieve this we have to start by getting everything connected digitally," explains Trevor.

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Claas' greenscreen room is a specific investment which allows for purposely tailored training to be presented to engineers around the world.

▸ apprenticeship courses for land-based service engineering technicians, explains Claas' Patrick Frawley. "This is a pretty unique set-up within the agricultural machinery sector and also in the automotive industry as well."

The reason the firm decided to establish an in-house academy, as opposed to continuing with the previous situation of working with external colleges, was to create both a better experience and to produce top-quality mechanical engineers, he says. "With the previous arrangement, we were finding the apprentices' ability to think on their feet somewhat diminishing, so we decided to invest in our own scheme and bring things back to basics.

"We're now teaching hard skills such as welding, fabrication and engineering, rather than just parts swapping, so apprentices can identify how to fix something themselves. We're trying to instil the understanding of engineering practices and material sciences in them, so that when something does break, they can think on their feet to find a solution.

"And because they're based at the same location as Claas employees, they have access to some of the most knowledgeable and experienced team members on a daily basis. This is a way of future-proofing ourselves and guaranteeing better quality on the ground."

Funding the investment

But how does the firm afford to train these engineering students? The students are employed by the dealerships which partially pays for the apprenticeship, while the remaining funds are delivered through a government levy Claas pays into which is then drawn down into the accredited academy, which is Claas in England and SCUR in Scotland.

Rob Portman highlights that the firm is still does face-to-face training and the site hosts in-person teaching for those who've purchased foragers or combines.

One issue that could pose both frustrating and a loss of investment is retaining engineers within the company once Claas has put time, effort and money into their education. "Because the apprenticeships are government funded, students aren't locked into a contract to stay with Claas once their training is complete," explains Trevor.

To reduce the risk of students leaving Claas at the end of their studies, the firm has

a novel solution. “Claas provides them with a toolbox, something that would usually be paid for themselves or by their family, and this is then on a 10-year repayment plan. For every year the student remains with Claas, £1000 is knocked off the price of the toolbox, so that if an apprentice stays for 10 years, they can keep the toolbox, which is worth a total of £10,000.”

This is an investment Trevor believes is entirely worth it. “Mechanics will have a van each worth about £25,000, and when they’re experienced, they usually have a toolbox worth up to £30,000, plus the Claas tools. This means a single van could be worth £60-£70,000. And then there’s the mechanic who’s had four years of apprenticeship training, plus continual professional development, and who’s likely earning £30-£50,000 per year.

“So a service van is worth £100,000 and the only reason we have these is to provide for our customers. We’ve around three or four times as many people to service and repair our machines as we do to sell them. This is why the training academy is so important,” says Trevor.

Claas’ investment in its future mechanical engineers appears to be paying off, with a retention rate of around 90%. “The aim is to maintain retention at this level, consisting of four years of training and six years with the dealership afterwards,” says Trevor.

Virtual training

To provide training to its dealer network beyond the academy, for technicians, parts and sales reps and customers, Claas has a virtual training facility set up in its training academy, explains the firm’s Rob Portman. This consists of a designated greenscreen room and a canopy backdrop in one of the workshops which technicians can stand in front of to provide personalised training to Claas’ dealer network via video link.

“We can also set up multiple cameras in the workshop to stream a live session straight to the dealers or customers,” says Rob Portman. “And with a system like this, there’s no limitation on how many people we can address at once, but we do try to keep the numbers low because this makes it more personal and allows for those being trained to ask questions.”

The greenscreen room was a specific investment of up to £40,000 which allows for purposely tailored training to be presented to engineers. “For example, when we’re providing software training it means we don’t have to bring the technicians to our Saxham site to look at laptops for a day. Instead, they can be based in a home office or at their dealership and receive the exact same course remotely.”

Rob Portman highlights that the firm is still doing face-to-face training, but this provides another form of training to the firm’s world network. “We also have small podcast-type rooms with screens for simpler interactions and all together this allows for a lot more flexibility in our training capabilities.”

The site also still hosts in-person training for those who’ve purchased foragers or combines. “Customers are able to bring themselves and several of their staff to the site to do a full day of training to get the most out of their product. This is something we’ve been doing for more than 20 years now.”

To further streamline operations and create a better customer experience, Claas’ service manager has been digitised,

Apprentices are taught hard skills such as welding, fabrication and engineering, rather than just parts swapping, so they can identify how to fix something themselves.

explains the company’s Rob Fillingham. “Our digital service manager can receive automatic alerts such as error codes or service alerts from connected machines that ▸

Claas' service manager has been digitised to receive automatic alerts such as error codes or service alerts from connected machines that create automatic orders for the workshops.

▸ create automatic orders for our workshops. We can still take jobs manually from customers, but these can now be managed through our digital process.

"Previously, jobs would have been recorded on paper and this limited accuracy and meant there wasn't any live access to the error codes on machines," he says. "But we now take the digital jobs and schedule them with a service engineer who'll be alerted via an app. Engineers then add the data we require to the digital job card through the app, providing us with better information to be able to look at quality improvements, identify issues in the field, and so we can determine how we can be more proactive. Going forward, the more machines we can get digitally connected, the better the service we can provide."

And this links up with the parts warehouse, whereby logs of parts that might be failing over and above anticipated levels are flagged and this can be fed back to the parts team to increase stocks, explains Patrick. "It all works in tandem to provide a better service."

The parts warehouse itself is almost three times the size it was before the renovation of the site, says Claas' Michael Ives. "We use a parts inventory management system to make the operation more fluid with around 500 boxes handpicked per day."

The digitisation of system allows parts to flow back and forth between the Saxham warehouse and dealerships, and between Claas' site in Hamm, Germany, says Michael. "Urgent parts will be sent straight to a dealer, even if they have to be flown in, rather than having to first travel to a centralised warehouse. It's becoming more and more fluid to make things more efficient for everyone." ■

A parts inventory management system in the warehouse helps to make the operation more fluid.

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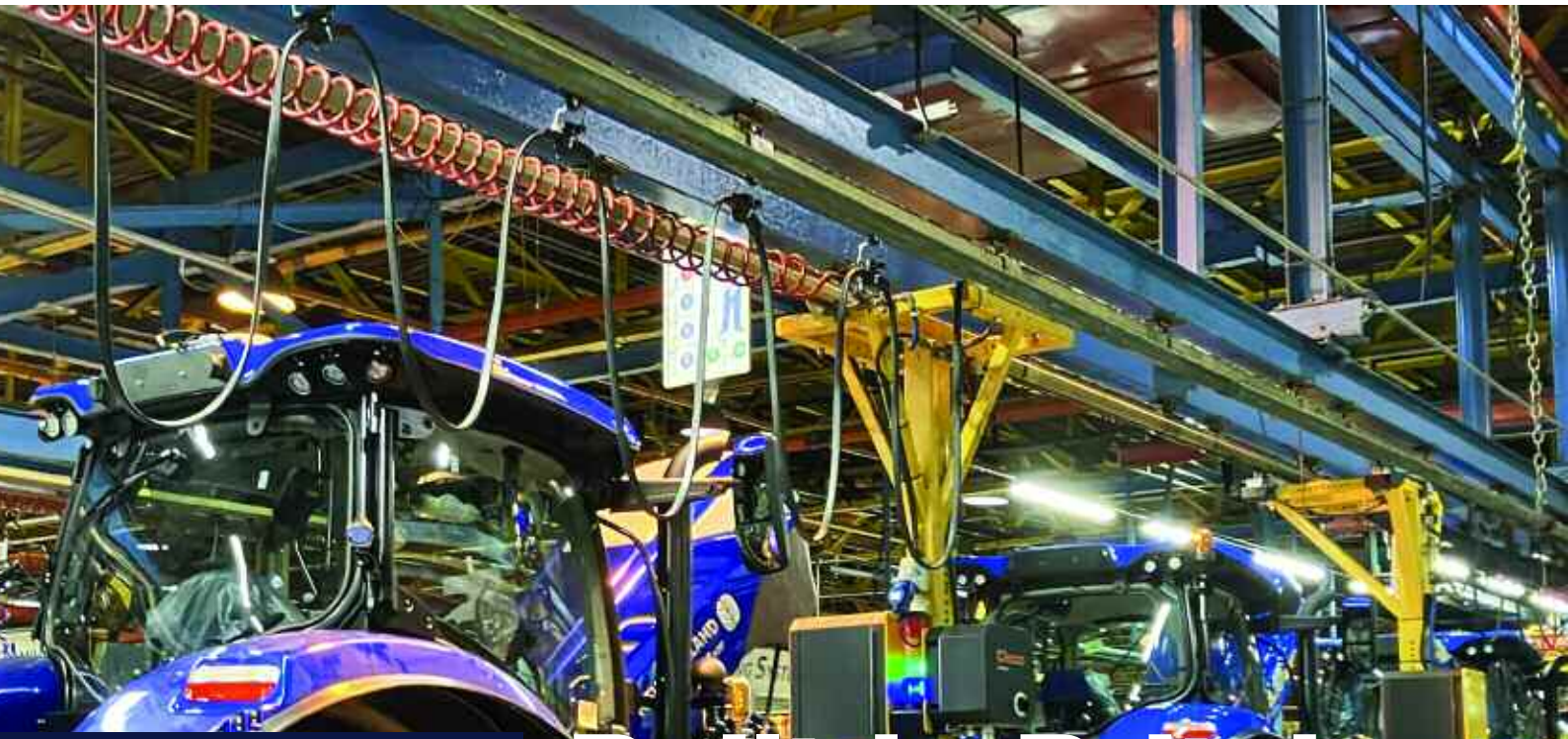

New Holland

Built in Britain

For six decades, blue tractors have been built in Basildon at a plant that's evolved and undergone significant change to match the modern requirements of farming. *CPM* was invited to New Holland's 60th birthday tour.

By Martin Rickatson

When it comes to complex machines, modern manufacturing theory is focused on specialism rather than end-to-end construction of a product in one plant. Making tractors is no different.

Where once the machining of metal and construction of many major components took place under the same roof as final assembly, with potential consequences for contamination and reliability, today those processes are separated by dedicated specialist factories, with key machine elements shipped for assembly by experts.

This, says New Holland, has driven the development of its Basildon tractor plant in Essex, and it reckons the result is more reliable products of higher quality.

The plant was developed on a greenfield site in the early 1960s by Ford, working on a £10M budget that had been stretched at completion to double that figure, numbers equivalent to £100M and £200M today.

Seeking to modernise the production processes at its existing car and tractor plant at nearby Dagenham, the company was encouraged to develop a dedicated tractor facility in the new town of Basildon.

Creating a new base

Work began on 2 April 1960 and was completed on 29 February 1964. The opening of the factory, with its distinctive 38m (125ft) 'onion' water tower and 414,528m^2 footprint on a 40ha (100ac) site, coincided with the launch of the 37-65hp Ford 6X tractor series made there. This comprised the 2000 Dexta, 3000 Super Dexta, 4000 Major and 5000 Super Major, later to be known generally as the 'Pre-Force' models following the 1968 launch of the 'Ford Force' 2/3/4/5000 tractors.

In the 1970s, the plant benefitted from £5M in new machinery and £7M spent on plant improvements.

Later significant product introductions would include the 7A1 '600 series' tractors in 1975, from the 2600 to the 7600, and the similar 7A2 versions with the new quiet Q-cab the following year. In 1981, these tractors were updated to Series 10 specification with later Force II (1986) and Generation III (1989) evolutions.

The first factory robots were installed in 1982 for engine flywheel ring gear installation, and in 1989 the plant produced its two millionth engine.

Late 1991 saw the launch of the all-new 40 series, a range that would later be sold with new branding following Ford's earlier decision to exit the farm machinery business and sell its Ford New Holland arm to Fiat, which adopted 'New Holland' as its brand for the future.

> *"While many things have changed here technologically, we still maintain important facilities established in 1964 including our test track."*

As the decade progressed, Basildon factory investments continued under the new owners, with developments including the installation of a robotic paint floor to improve the painting process, and the introduction of automated guided vehicles (AGVs) for speedier and safer movement of components.

After 44 years and more than 3M units, in 2008 Basildon built its last engine and the plant was subsequently wholly devoted to tractor assembly. The business's management points out that this natural evolution of manufacturing matches the method of most other modern manufacturers across all sectors, bringing together components produced elsewhere

by expert teams for final assembly by specialists in each process, in an environment dedicated to the purpose.

As an example, engines now come from the Italian facilities of FPT Industrial which falls under the same overall ownership, axles and transmissions come from CNH Industrial's plant in Antwerp, and cabs hail from the firm's factory in Croix, France, although their design is led from Basildon.

Subsequently, the plant produced New Holland 60 series, TS, TM, T6000 and T7000 tractor lines, and now manufactures the T6 and T7 ranges, spanning 125-300hp.

Recent developments at Basildon include significant investment in its role as the New Holland Alternative Fuels Centre of Excellence. In 2006, the firm declared its ambition to be the 'Clean Energy Leader' in the tractor sector.

While elsewhere in the world it's developed a smaller Electric Power tractor based on its T4 series, in 2021 New Holland put into production the industry's first tractor of its type at Basildon — the T6.180 Methane Power LNG (liquefied natural gas), to be joined later this year by the T7.270 Methane Power CNG (compressed natural gas).

To meet the legislation in place for producing gas-powered vehicles, a dedicated sub-assembly area was opened at Basildon when T6.180 Methane Power LNG production began in 2021, complemented in 2022 by a dedicated pre-delivery inspection building for methane-fuelled tractors.

Gradual uptake

While the price is around 25% greater than for a diesel equivalent, small numbers of T6.180 Methane Power LNG tractors are now at work on UK farms that have invested in the necessary infrastructure to achieve a longer-term reduction in fuelling costs as well as their greenhouse gas emissions, particularly where residual waste after methane collection is returned to the soil.

The business says these early adopters have tended to already be involved in biogas production and/or use, or have a significant end-customer demand for enhanced environmental credentials, and are doing high-hour workloads.

With the infrastructure to collect, process and store methane from AD plants and slurry stores now readily available, New Holland believes this will drive development of the market for its ▸

Transaxles from CNH's Antwerp factory provide the starting point of each tractor, mated to engines from Italy and cabs from France.

Cabs frames from the Croix plant in France are trimmed and finished at Basildon as part of tractor assembly.

T6 and T7 production requires more than 10,000 different product specifications to meet global requirements – 85% of production is exported.

▸ methane-powered tractors from farm businesses seeking ways to cut carbon footprints, reduce dependence on external fuel supplies and lower machine running costs.

Early last year, in order to extend its capabilities beyond gas-powered tractors into the infrastructure and equipment necessary to produce gas power, CNH Industrial purchased a majority stake in Bennamann, a UK-based firm focused on capturing methane for energy use.

CNH's relationship with the business goes back to 2019 when the parties jointly developed an LNG tank for the T6.180 Methane Power LNG, and CNH subsequently acquired a minority stake in the business.

Pilot farms are already using captured methane from livestock slurry, which is purified into biomethane that is subsequently either compressed (for CNG Methane Power tractors) or liquefied (for LNG models). Launched at Agritechnica 2023 to extend the Methane Power line, the new T7.270 Methane Power CNG's larger chassis helps maximise on-board gas storage, with capacity for 1,265 litres (219kg), or 178% more fuel than the T6.180 Methane Power LNG's 455 litres/79kg.

But conventionally-powered tractors look set to dominate production for some time yet as the market for non-fossil fuel powered machines is developed. Today, a complete tractor rolls off the Basildon assembly line every five minutes, with more than 10,000 different product specifications to meet global requirements — 85% of production is exported.

Just as it has for tractor customers, technology in the plant has made procedures faster and more efficient. With only 1.4 tractors a year having the same specification, no two machines made during annual production are identical.

To ensure this tailor-making is swift and efficient, New Holland has adopted a 'smart factory' plant management system designed to ensure the correct parts reach each tractor at every point in the production process.

Smart factory

"We use a radio frequency identification (RFID) system, with individual tags for each of the 3500 individual part boxes in circulation around the plant at any one time," explains Ryan Hopkin, plant director, who came to the factory five years ago from the automotive sector.

"This 'smart is part of factory' technology integration began in 2020, resulting in the gradual installation of 40 digital workstations throughout the line that ensure precision management of both processes and parts, with full traceability so we can identify any issue.

"For example, in terms of cab roofs alone there are 27 different types across different models, markets and specifications. In 2023 we installed a new bonnet and cab roof manipulator, enhancing precision movement and installation of these components," adds Ryan.

"The same year, we also installed a new robotic painting plant and monolayer paint system which is among the most advanced across all CNH factories, to further enhance product protection and longevity. Further investments have included improvements to our electrical connection installation quality process."

Around 300 people work on the production line at any one time, at which point there'll be approximately 160 tractors at various stages of manufacture. The line has 2.2km of suspended monorail above it to support part-built cabs until the point they're married to the tractor unit itself, a highly-skilled manual process. Completion of a single tractor takes around 1.5 days, at which point it's towed off the end of the line for its pre-delivery inspection.

Basildon is also responsible for the engineering design of the T6 and T7 tractors it manufactures, which span 125-300hp with a team of 70 staff across multiple disciplines overseeing product development.

In 1987, the first computer-aided design systems were adopted, followed eight years later by the first 3D modelling technology. Since then software has evolved rapidly to include more advanced digital modelling tools and the ability to work with 3D printers, allowing rapid trialling of development concepts.

Sean Lennon believes there's a clear path for its automation development that won't necessarily see drivers disappear from arable farms.

Tom Kindred from the Basildon engineering and product development team, explains that the department works particularly closely with CNH's global development teams in Chicago, USA, and Modena, Italy, to benefit from the company's worldwide expertise and ensure the requirements of different markets are met.

"While many things have changed here technologically, we still maintain important facilities established in 1964 including our test track which retains an important role in testing and development to ensure quality and reliability of production machines ahead of launch.

"Wireless technology has replaced the traditional test truck full of data loggers attached via umbilical wiring to the tractor running alongside, and we can share data instantly with any of our global facilities," he says.

Tom says rolling road facilities allow the team to subject test tractors to stresses that can replicate in a few hundred hours an entire machine lifetime's workload, to ensure components and assembly processes are sufficiently strong. "But field testing is also important, and we have a farm in Suffolk where this takes place plus we work with farmers around the UK and the world to test developments for us.

"Having the product development team based here at the factory means we work closely with other company functions in addition to design and manufacturing. Working with product marketing we can respond to customer feedback, while co-ordinating with our service teams we can identify and rectify issues on the production line, and collaborating with our on-site training centre we can assist in

Attracting and retaining staff is central to successful product creation, which translates into customer satisfaction, suggests David Rapkins.

getting service engineers quickly up to speed on new developments."

Beyond alternative power, automation is one of the key current topics in tractor development and Sean Lennon, New Holland vice president for Europe, believes there's a clear path for its development that won't necessarily see drivers disappear from arable farms.

Drive to automation

"For the family farms operating one or two tractors, automation doesn't necessarily present any advantages," he acknowledges. "But on larger arable farms struggling to find good labour, automation is driven by this and by requirements for less-skilled operators to be able to do a better job at high workrates, and existing skilled operators to get the maximum from their machines. This is where we see the drivers of automation.

"I think it's first likely to be seen more commonly in 'fixed' crops such as vineyards and orchards which are already based on repeatability, and so are simpler to adapt to automation."

Since its commercial vehicle activities were demerged in January 2022 as Iveco Group, leaving CNH Industrial as an agricultural and construction machinery specialist, New Holland's parent business now comprises 43 global factories and more than 40,000 full-time employees.

In Basildon, there's a focus on attracting the best factory and support staff and ensuring they understand agriculture and the influences on the tractor and machinery market, says David Rapkins, New Holland business director for the UK and Ireland, who oversees the business's relationship with its 32 UK dealers and their 103 branches.

"We're firmly focused on bringing in the next generation to our business in order to ensure continuity for our customers and often host students from schools and colleges to show them the opportunities in an industry that's full of technology and opportunity.

"We have a full apprenticeship programme to support our dealers and loan components and machines to colleges for training. We also have 20-30 placement students each year with backgrounds not just in agriculture and engineering, but many other disciplines, with many returning to permanent positions here," he says.

"Attracting and retaining staff is central to successful product creation, something we believe translates to customer satisfaction." ■

Harking back to the times of the Basildon plant's 1964 opening, New Holland unveiled a special T7.300 tractor in psychedelic livery.

talkingtaties

by Andrew Wilson

Safe way should be the easy way

So how's it going? We're about a month behind instead of what was three, so progress has been made.

My plan from last month has mostly gone ahead. We have enough malting barley sown to fill our contract and have a few oats in too — albeit there's barely a full field sown due to wet patches we've had to go round.

The bean decision was down to 'muck or nettles, they're going in' and were sown on 20 April, mostly driven by their soil conditioning and wheat entry characteristics rather than profitable farming. But if we sow nowt, then we harvest nowt.

Our winter barley has had all of its fertiliser; the wheat has only a small top up left depending on potential in the coming weeks; and we've managed to get some spraying done between the showers and high winds.

On the root crop front, as I write this on the last day of April, we have 8ha of our 20ha sugar beet crop sown, so a late start again. I placed some nutrition and biology under the seed behind the leading leg on our drilling rig. It's not quite strip-till in the truest sense, but it's made a significant difference to the travelability and subsequent soil damage levels at harvest in the wet seasons that seem to be coming more common.

We've sown some nurse barley in the lightest field where untreated seed is sown, and planted pollinator strips in all beet fields in an attempt to keep virus carrying aphids in check — there's also a trial strip of in-furrow garlic granules for the same reason.

Potato planting is yet to start here, but at the present moment that isn't a big problem. We still have 12ha each of beet, barley and oats to sow, and a myriad of other jobs to complete ideally before planting. And, our self-employed team members are, like us, not quite drilled up yet.

The muck and fert is on, covers topped, and inputs ready. The seed in chitting crates is in good order and poised ready for action, so once the weather stops drenching us every few days, we'll be on. One of the benefits of halving our potato area a few years ago is that we can afford to wait for better conditions in times like this. Well planted, half grown and all that.

Given the short sharp windows of opportunity in recent months and building pressure on teams of people and machines on the ground, it's perhaps timely that I bring safety to attention. It's a subject that's seen considerable focus on social media channels of late.

Way back in late 1999 I fell from a sugar beet cleaner onto the concrete workshop floor and put myself in the neurosurgeon's department at Leeds General Infirmary for a week. I have no idea what they did while the lights were out for me, but boy am I glad they did it. I was very lucky indeed and bar a small patch of missing vision, I made a full recovery. Did I learn from it? Not entirely.

Rushing on filling a potato store a year later with the 'emergency chairs' of conveyors, I took a short cut too many and ended up with a foot stuck in a slewing elevator and on crutches for three months. Eventually the penny drops and it changes your perspective a bit.

Back then, the HSE was more about reducing accidents and less about making money than they seem to be now. They came to visit and asked me how such accidents could be prevented. I made a suggestion and they took it to the manufacturer who put out a modification to all known machines at a very low cost — proactive practical solutions for the benefit of all. The way things should be, in my humble opinion.

Things change though. Machinery is bigger, heavier, and less people are trying to do more in less time. Machines block and break in less than ideal conditions and tired operators don't always follow text book rules. It's human nature I suppose, to want to take the quickest route.

So where am I going with this? Quite simply, make the safe way the easy way. All the reams of paperwork won't save lives and prevent accidents or stop corners from being cut, even if it does help when the excrement hits the proverbial fan blades.

What makes a difference in my view is quick, simple, convenient measures to assist staff in doing things safely. Safety specs in every tractor to keep eyes safe, changing wearing metal or using a cordless grinder in the field, suitable gloves in convenient places, a spare guarded pto shaft that would fit any destoner, a pair of axle stands sat on the trailer of potato planting paraphernalia to keep people safe under machines changing those few worn tiller blades while the headland gets ridged or whatever.

And, for heaven's sake, please stop for a brew and a chat at least once a day. The talk of 'the good old days' is common — folk bemoaning that no one has time for anything these days. If 20 minutes or so can't be spared in what will be days in the teens of hours for weeks on end, then the system needs tweaking.

Operators require a refuel and check over just like machines do. Without them, the whole job would grind to a halt pretty quickly. Safe planting everybody.

Andrew Wilson is a fourth-generation tenant of the Castle Howard Estate in North Yorkshire.

He has a strategic approach to direct drilling on his varied soil types and grows a wide variety of crops. He's passionate about the potato industry and having been utilising cover crops to reduce cultivation and chemical use since 2011, dipped his toe in the water of regenerative potatoes in 2021.

@SpudSlingsby

> *“We noticed lifting was trickier the deeper we’d cultivated.”*

Fitting in with new ways

Alternative approaches to sugar beet

Can sugar beet growers successfully use reduced cultivations to reap the cost saving benefits and improve sustainability credentials? *CPM* learns about a trial comparing different approaches.

By Mike Abram

In most crops, reducing cultivations results in lower establishment costs through minimising labour and machinery requirements, plus reduced fuel use. This is in addition to the added benefit of helping to preserve the soil’s natural structure by reducing the impact of heavy field equipment.

But economic benefits can be wiped out if yields are pulled down, which can be the concern with sugar beet where tillage is used to produce a fine, uniform seedbed in a crop that’s particularly sensitive to poor soil structure and compaction.

However, with increased emphasis on sustainability in agriculture and rising interest in regenerative practices, BBRO has been keen investigate how sugar beet can fit into that approach, explains applied crop scientist Dr Georgina Barratt.

The obvious starting point was testing different tillage approaches, which led to a trial with Holkham Farming Company in Norfolk, which has been aiming to reduce cultivations across its 3500ha business which includes both sugar beet and potatoes.

“We used to use a Lemken System-Kompaktor as part of our sugar beet cultivation,” notes Connor Tindall-Read, assistant farm manager at Holkham. “It provided the perfect seedbed everywhere but was probably overkill on a lot of our land.”

Cover cropping

“Now we cover crop and use a Köckerling Allrounder as the farm standard cultivation ahead of beet, which does a perfect job on about 90% of our land. If we require a little bit more, we have a Vaderstad Carrier to run a set of discs through,” he says.

The chance to quantify those practices and obtain data on the carbon footprint, as well as sugar beet yield, led to Holkham’s interest in hosting the BBRO trial, adds Connor.

Four cultivation practices — ploughing, deep tillage with a Vaderstad Cultus tine cultivator, the farm standard Allrounder, and shallow disc cultivation with the Carrier, were compared in a field-scale strip trial.

Cultivation depths ranged from 5cm with the Carrier to 30cm with the plough and Cultus, with the Cultus also set up at a 20cm depth, and the Allrounder at three depths — 10, 15 and 20cm. Each strip was 18m wide and replicated twice with all cultivations taking place on 28 April with drilling 24 hours later.

Connor says fuel use was obviously higher the deeper the cultivation, with the Carrier using 4 l/ha and the Allrounder 7 l/ha, compared with 14-16 l/ha for the Cultus and plough. Work rates were also slower.

“Using a Cultus — or our big 7m Opus at full depth — would have completely hampered the drilling operation as we wouldn’t be able to cover a lot of ground very quickly,” he notes. ▸

The trial gives some confidence, albeit with caveats around soil type and a relatively kind season, that you can reduce tillage and be successful growing sugar beet, says Georgina Barratt.

▸ Whereas Georgina explains that on a relatively kind-to-work loamy sand soil type and amenable weather following drilling, differences in establishment were relatively minor.

"The Carrier plot was a little behind as you might expect at the start of the season, with digs on 26 June showing lower root biomass than the other treatments. But by the second biomass dig these were no longer apparent and all seven approaches had beet of a similar biomass. I was a little sceptical that it would catch up as it wasn't just numbers, it was visibly behind."

The main difference in the trial was surprisingly in the plough plot. "We haven't ploughed before sugar beet in the eight years I've been on the farm," says Connor. "But, it brought up a lot of weed beet. We haven't grown sugar beet in that field in the past 10 years, so we weren't aware of weed beet pressure."

The weed beet showed to a line, adds Georgina. "It resulted in around a 20% yield loss, which is what we'd expect as previous research shows one weed beet per m^2 equates to about 20% yield loss."

Other than that, there were little differences in yield between any of the plots — measured by replicated hand harvesting in January which went through a British Sugar tare house.

"It was interesting the Carrier plot did catch up, but we wonder if in a more challenging year with a drier spring and establishment period whether that would have happened," reflects Georgina.

In common with most later lifted crops this season, conditions when the beet harvester lifted the remaining beet were less than ideal, adds Connor. "We did notice lifting was trickier the deeper we'd cultivated.

"It wasn't to the extent that we were completely bogged down in the ploughed work and were

Kit improvements

Many sugar beet drills have been designed to drill into fine seedbeds with good tilth, but with increasing interest in minimum or even strip tillage approaches where seedbed quality might not be as favourable, drills that can cope with a variety of conditions could be required.

That's why Stanhay has been trialling adaptations to its X7 sugar beet drill which will help it to drill where growers are using minimum tillage or strip-till techniques, says Chris Fletcher, the firm's managing director, after also being asked for similar modifications for its range of vegetable drills.

"We started looking at whether we can do some cultivation on the drill, particularly moving trash and clods out of the way of the coulter and drilling into more marginal cloddy seedbeds, where you need an element of cutting to make a slot for the seed," he explains.

That led to initially developing a pre-cutting disc in front of the coulter, which in the new version has been taken a step further by adding a set of trash clearing V-wheels at the front, which move any residue out of the coulter's path.

"They also provide a little pre-cultivation that just nibbles the top of the soil surface to make a slightly finer seedbed for the sugar beet," he says.

The design has been tested in trials on a farm near Peterborough in different conditions, including direct drilling into stubble or following the leg of a subsoiler, as well in a single pass operation behind a power harrow drill planting a companion crop of oats into stubble.

"It moved enough soil to direct drill into stubble," he reports. "But if the stubble field is very hard, the jury's out on whether the beet will actually grow and penetrate the hard pan of soil.

"Following the subsoil leg left a very uneven finish, so pulling a coulter through meant seed could fall down cracks or sit on the side making it difficult to get uniform

travelling fine in the Carrier area, but you could see as you went across the treatment area, the harvester and trailers started to struggle more and left deeper wheelings."

Soil type dependent

The results give some confidence, albeit with caveats around soil type and a relatively kind season, that you can reduce tillage and be successful growing sugar beet, suggests Georgina. "Because it could depend on soil type we're interested in working with a grower on heavier soil to conduct similar work."

Ploughing has its place too, she stresses. "It can be very beneficial for weed and pest control, as well as reliable establishment, although the trial has also shown that ploughing isn't always the best solution and can dig up problems with weed beet."

A second year of trials is planned at Holkham with a streamlined treatment list to allow for three replicates. "We've swapped out the plough treatment for a strip-till treatment. Strip-till is a great alternative for sugar beet because you till where you require it. But we know while it works for some people, others have tried it and been less successful," says Georgina.

The other three comparisons will be the Carrier at 5cm depth, the farm standard Allrounder at 20cm and the Cultus at 30cm.

Greenhouse gas emissions data will also be collected. Last year's GHG data, which was collected between cultivation and drilling, albeit with a 24 hour wait following the equipment's set up, didn't show any massive differences, reports Georgina.

"I think that was partly down to methodology, so this year we'll cultivate and drill on the same day, install the equipment and then measure early the next day. Hopefully that will be a better approach," she concludes. ■

depth," adds Chris.

However, the result was much more positive drilling into power harrowed soil. "These were conditions a normal sugar beet drill would struggle in with the straw residue."

As a result, the farm has drilled beet earlier than otherwise would have been possible, says Chris, which has been helped by the drill having scrapers on all soil-engaging components. "It's running in wetter conditions."

Assuming successful beet establishment follows, the modified drill will be available in a six-row version next season, he says.

"We're trying to make as versatile machine as possible. With most manufacturers moving to larger width drills, we offer something unique in selling a six-row drill that doesn't require such a big outlay but has the ability to get your sugar beet in the ground in a range of conditions," concludes Chris.

Stanhay has been trialling adaptations to its X7 sugar beet drill which will help it to drill where growers are using minimum tillage or strip-till techniques.

The design has been tested in trials on a farm near Peterborough in different conditions, including direct drilling into stubble or following the leg of a subsoiler.

Real Results Roundtable

BASF
We create chemistry

Blight – what could be next?

Potato growers are all too familiar with the threat of late blight and its various genotype guises. In the second of BASF's Real Results Roundtables, *CPM* hosts an open discussion to explore where the disease could be heading and how a new tool could help.

By Janine Adamson

The challenges which continue to inflict themselves upon potato growers don't appear to be close to resolution anytime soon. Whether it's new resistant blight strains on the continent, seed shortages or simply the weather, there are many factors which can't be easily controlled.

However, the humble potato remains an integral crop from both a UK grower and consumer perspective.

For this Roundtable, *CPM* brings together James Hutton Institute potato pathologist, Dr David Cooke; SAC Consulting senior potato consultant, Kyran Maloney; and BASF agronomy manager, Aliona Jones to explore what's often coined the most impactful challenge of all — potato late blight.

The current UK potato crop

The Roundtable began with agreement from all that the wet weather has been the number one hinderance for the past six months. "As a result, some of last season's tubers are still in the ground which provides an excellent source of primary inoculum for late blight and early infection," warned David. "I spoke to an agronomist in the South East recently and he explained that they'd just finished harvesting and were about to start planting — around two weeks apart. That's almost unheard of."

In response, Aliona said some of the growers she'd spoken to lately, particularly in the East Midlands and Yorkshire regions, had no choice but to give up. "Crops which haven't been lifted will sadly have to stay there," she commented.

David added that for potatoes which have been successfully harvested, the quality of seed crops has been poor, resulting in an overall UK shortage. "There's a concern that because growers are short on seed, they may have to scrimp on quality, or import when they wouldn't have imported before," he explained. ▸

> *"It's a positive message – we're still fortunate that there is a range of actives."*

Dr David Cooke said some of last season's tubers are still in the ground which provides an excellent source of primary inoculum for late blight and early infection.

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To formulate a blight programme without mancozeb and comply with FRAG guidelines, it can be done, but it's complicated, said Kyran Maloney.

Blight update

Growers will be acutely aware that the blight pressure in 2023 was high, which meant the Fight Against Blight (FAB) initiative undertook a lot of sampling, said David. "We were very concerned about the new genotype (EU_43_A1) coming in from the continent.

"But despite the increase in sampling, we didn't find EU_43_A1 which has to be a positive message. Nonetheless, there still remains a lot of 36_A2 (comprising 52% of blight populations), particularly in England and Wales. In Scotland, 6_A1 dominates (32% of blight populations) with some 37_A2 which is the lineage with resistance to fluazinam."

David explained that since EU_43_A1 was first reported at British Potato in Harrogate in November 2023, there have been two findings of the genotype in Ireland. "Of course the concern is when you find one isolate, it's pretty certain that it won't be the only one.

"Plus, we were expecting it to come from Denmark/the East and it could well have snuck into early crops from the West. It'll certainly be concerning for growers and economists alike," he said. David pointed out that monitoring for EU_43_A1 will continue through the FAB project.

There's an increasing risk of a second new strain which is related to EU_43_A1 – EU_46_A1

Although the UK is yet to experience this particular genotype, David highted the increasing risk of a second new strain which is related to EU_43_A1 – EU_46_A1, which has been found in the Netherlands and North West Germany. "This lineage is where resistance to the carboxylic acid amides (CAA) group of fungicides has been found including oxathiapiprolin. This is a real concern because of its novel resistance," he said.

In response, Aliona explained that fungicide resistance isn't just high on the agenda for product manufacturers such as BASF, it's a shared concern. "When attending technical grower meetings, of which I can undertake around 30 in a season, resistance is always the primary topic. Thanks to monitoring schemes and knowledge exchange from research institutes, it remains high on the agenda for all," she said.

Product revocations

Conversations quickly shifted to the recent news about mancozeb. In January, the Health and Safety Executive (HSE) announced that the active doesn't meet approval criteria and therefore it proposes to withdraw it from use.

And although it's still available for applications in the current season, Kyran said a future without mancozeb is a concerning one. "If you consider the pesticide usage data for Scotland or England, you realise it's relied upon as the backbone of late blight control.

"I think it's the fact it's a multi-site and has a useful role to play in programmes, but equally it's an important partner product which protects other active ingredients," he said.

"To formulate a programme without it and comply with FRAG (Fungicide Resistance Action Group) guidelines, you can do it but it's quite complicated, even more so for long-season ware crops."

David echoed Kyran's sentiment: "It's speculation, but of course one can ponder the issues that are arising in mainland Europe following the revocation of mancozeb a few years ago. Has the loss of the multi-site encouraged or resulted in the breakdowns we're seeing?

"It's remarkable, even 6-7 years ago we'd have only been discussing blight resistance to metalaxyl, but now there are problems with fluazinam, CAAs and oxathiapiprolin all coming up — the trend is concerning. You can't help but wonder if it's related?"

David explained that for Danish potato growers, many believe recent fungicide resistance problems have been due to the country's pesticide legislations. "It's probably what kicked off the original CAA resistance within Denmark — a lack of product choice and the way they were using them. That's certainly the case for Revus/mandipropamid — used in blocks and in high disease pressure.

"This meant a product failure followed by severe disease pressure and then firefighting with other products, it's exactly against the advice which all manufacturers provide on best practice."

David referred to the numbers — that blight generates 20,000 sporangia per cm^2 of active lesion, per day. "If you multiply that up for 10ha with 1% disease cover there's countless spores, each with a potential point at which mutation and selection pressure can happen. So the bigger the population of the pathogen, combined with strong selection pressure from product use, it's done as science would predict."

In response, Kyran reminded growers to observe local circumstances. "Consider crop variety and its resistance rating, and what the growth stage of the crop is because the actives all have different properties and are effective at certain stages.

"But having mancozeb in there is important, so keep using it while you can. Although good resistance management is possible without it, it's just hard."

Resistance management

Furthermore, Kyran highlighted scientific evidence regarding how to reduce the frequency of resistance strength in the population. "We know that mixing, so actives from different FRAG groups with different modes of action, is a good way to protect them; as is alternating sprays.

"Next time there's a blight spray, using chemistry from a different FRAG group is a very effective way to try and guard against resistance, alongside making good use of cultivar resistance — the two protect one another. It's about an integrated strategy, which is perhaps something we've not had enough focus on in the past," he said.

Kyran also raised the importance of monitoring and keeping an eye out for Hutton Criteria periods and localised FAB reports. "And not to neglect the weather forecast and whether you can actually

travel with a sprayer or not. Those factors all help to optimise spray timings."

David added the importance of growth stage monitoring. "If crops are growing quickly into rapid stem extension, extra care is required at that stage," he said.

Fungicide options

From a BASF perspective, Aliona said that ametoctradin remains a key active ingredient in the company's late blight control portfolio. For example, Enervin SC (ametoctradin), which she says is a good 'mixer'.

"There's also Percos/Zampro DM (ametoctradin+ dimethomorph) which has the added benefit of tuber blight control.

"But the shiny new toy is Privest (ametoctradin+ potassium phosphonates) which is a timely arrival with various advantages, mainly that it contains two unique modes of action that have no known resistance issues. The product itself has a low resistance rating too," she said. "Also, the formulation has good rainfastness and UV resistance which means it offers a lot."

David agreed that the launch of Privest is welcomed. "Having a range of actives in different combinations as well as straights gives growers more flexibility because they have to consider mixing.

"It's a positive message — we're still fortunate that there is a range of actives — even fluazinam continues to have a role. It's not all doom and gloom and this product fits well with that profile."

To that end, Kyran stressed the importance of not immediately shelving products even if resistance issues start to appear. "A prerequisite for that is having a good understanding of how to manage resistance — having a diverse armoury, which Privest will help with, and also keeping abreast of monitoring.

"If you don't know what's happening with the population, you're relying on control failures to tell you there's a problem and then it's too late," he said.

But importantly, he says his team are excited about the potential from the actives in Privest and the role they can play in programmes. "I think it'll take a few seasons for growers and agronomists to get their head exactly around the best way to use them, but from what we've seen in trials, the product is great."

Other thoughts

The group agreed that the Roundtable would do a disservice to the topic if it didn't discuss wider blight management strategies.

According to Kyran, blight can't be successfully managed without chemistry, but relying on it solely will create problems as seen on the continent. "More could be made from tailoring blight control programmes to cultivar resistance. I'd like to see a more nuanced approach because there is diversity in varietal breeding.

"There are also other aspects such as groundkeeper management and striving to remove primary sources of inoculum. All too often you see waste potato dumps with uncontrolled growth," he stressed.

David added that this also loops back to seed issues. "When it comes to managing primary inoculum, buying as high quality seed, as is affordable, is important. I'd also echo thoughts on volunteer control and potato dump management."

To close the Roundtable, Aliona commented that it's often about going back to the basics, even with the launch of attractive new chemistry. "In every crop, we support integrated pest management and best practice.

"New products don't come to market frequently, so losing them to resistance issues is false economy. We have to protect both BASF's and everyone else's products for the future," she concluded. ■

Aliona Jones says Privest (ametoctradin+ potassium phosphonates) is a timely arrival with various advantages, mainly that it contains two unique modes of action that have no known resistance issues.

The James Hutton Institute

FIGHT AGAINST BLIGHT

BASF will continue to support the Fight Against Blight initiative this coming season.

The Roundtable discussed how more could be made from tailoring blight control programmes to cultivar resistance.

Real Results Roundtable

BASF's Real Results Circle is a UK-wide agricultural network now in its eighth year. The initiative is focused on bringing together growers, industry experts and BASF to create a more resilient farming system that's sustainable for farm business profit, for the people we feed and for the planet we live on.

Real Results Roundtable is a new initiative which explores related topics, such as resilient disease control, environmental stewardship and return on investment. Roundtables centre around Real Results Circle farmers and associated experts from the wider industry.

By coming together to openly discuss and therefore face challenges as one, we can find out what really works and help to shape the future of UK agriculture.

CPM would like to thank BASF for kindly sponsoring this feature, and for its assistance in providing access to the relevant experts and contacts required to produce it.

BASF We create chemistry

THE REAL RESULTS CIRCLE

Potato agronomy

Perils in potatoes

With an ever complicated story for potato late blight, optimising tools such as varietal resistance and industry monitoring services could help growers to manage the threat. *CPM* finds out more.

By Mike Abram

Varietal resistance to blight should be a useful tool for growers to help manage the disease in the face of the challenges from resistant strains, but there are concerns over the validity of resistance ratings as well as commercial pressures on variety choice.

Late blight varietal resistance testing is carried out by SASA (Science & Advice for Scottish Agriculture) on new varieties using an isolate of EU_13_A2, but once completed isn't routinely revisited as blight strains change which potentially leaves a hole in the information which growers and advisers are basing strategies on.

Cultivar-based integrated control of blight isn't really being considered or used widely by the industry, suggests ADAS potato pathologist Dr Faye Ritchie. "Practically, that could make a big impact in terms of the risk of blight to a crop."

Applying less of a particular fungicide active will reduce selection for fungicide insensitive strains, she adds. "Recommending mixtures is right given the current risks, but there's potential to go further — using varieties with better resistance would increase opportunities to use reduced rate mixtures. The safest way to do that is to increase the resistance of your potato cultivar.

"There's always the question around who carries the risk and the liability for using reduced rate mixtures, so evidence that these strategies would work is required.

Alternative approaches

"Given we've seen the appearance of fungicide resistance to several modes of action in a relatively short space of time, and the cost implications associated with managing this risk, it would be a good time to be thinking about alternative ways to manage blight," she suggests.

Even where more resistant varieties are being grown on farm, most growers use the same blight programmes regardless of variety, says SAC senior potato consultant Kyran Maloney. "If we had a little more confidence in the resistance ratings and a bit more willingness to manage in a slightly different way there might be more room for manoeuvre."

Indeed, according to Agrii's Nick Winmill, at least two seed houses are no longer willing to stand by varietal blight resistance scores of their new and establishing varieties based on the uncertainty over the ability of those genetics to withstand the new strains. "Part of the challenge with new resistant varieties is acceptance in the marketplace," says Nick.

Growers don't have much choice in what variety they grow, agrees Midlands-based independent potato agronomist Mark Taplin from Harvest Agronomy. "It's typically pulled through by customers."

> *"It's totally absurd Hutton has to go round with a begging bowl every year to fund Fight Against Blight."*

Blight resistance has also not been high on breeders' lists of priorities, suggests Norfolk potato agronomist Simon Alexander. "It's not surprising — when

Cultivar-based integrated control of blight isn't really being considered or used widely by the industry, suggests Dr Faye Ritchie.

Mark Taplin says he's taking a cautious approach using robust programmes involving mixing multiple modes of action.

you look at cereals there's a handful of important traits to breed for, but in potatoes it's easily 30 or 40 traits.

"There are so many things to aim for, and the problem is relying on conventional breeding even with the use of markers etc, you have constraints on what you can breed for. And for me, PCN is probably something I'd rather have resistance for because controlling that is probably under even greater pressure."

This discussion is prevalent because as far as is aware, resistant blight strains EU_43_A1 and EU_46_A1 that caused problems for Dutch growers last season haven't reached the UK yet.

But with a couple of isolated cases appearing in Ireland in August last season, it's difficult to know what will happen this season, making it much harder to plan blight control programmes that marry the sometimes-competing objectives of efficacy, resistance management and cost.

"There is a threat," stresses Dr David Cooke, James Hutton Institute potato pathologist. "There are now lineages with resistance to fungicides including, worryingly, one with double fungicide resistance."

The fact that double resistance is to two of the key groups of blight fungicides — the widely used carboxylic acid amides (CAA) which includes actives such as mandipropamid, benthiavalicarb and dimethomorph, and the oxysterol binding protein inhibitors (OSBPI) which currently consists of Zorvec products containing oxathiapiprolin, the most active blight fungicide active available — makes the situation even more concerning for growers and agronomists.

"Both groups are fundamental to blight control," says David. "Resistance appearing to both in quick succession is a concern."

There are also reports of isolates of EU_36_A2 collected in Denmark and the Netherlands with resistance to OSBPI fungicides. However, David can't recall a new lineage of the blight pathogen which has originated in the UK, emphasising they generally arrive either on the wind or being imported on seed.

Chief among the reasons why the UK isn't the source of new strains is the industry's adherence to resistance management strategies — the use of formulated products with more than one mode of action, mixing and sequencing. The UK has been helped in the past three seasons with continued access to mancozeb, unlike farmers in the EU.

Assume the worst

But with the Irish finding of EU_43_A1 in the 2023 season, David suggests programmes should be adapted, assuming the worst. For resistance management, that means mixing at least two modes of action in every spray, and/or using strict alternation of at-risk modes of action through the season.

"We have good evidence about resistance management strategies," continues Kyran. "Mixing is most important followed by alternation and also reducing exposure of the chemistry, where possible, although that's not an option when you're concerned about outbreaks."

Testing any outbreaks and especially where there's been product failure will be crucial in 2024. For both CAA and OSBPI fungicides, the mutations causing resistance are known which makes testing for presence relatively straightforward.

But financing those tests is another matter — since the discontinuation of AHDB Potatoes funding for the Fight Against Blight (FAB) service led by James Hutton Institute has been an annual battle. Last year, funding amounted to £130,000 provided by 16 sponsors for testing of around 100 outbreaks.

The aim will be a similar amount for this season, says David, although tracking whether a particular strain carries the resistance mutation isn't costed into FAB. "The Hutton Institute will always do what we can to protect the industry, and particularly if we get early outbreaks of EU_43_A1 we'll want to know whether they're resistant or sensitive to key fungicides.

David Cooke says the Hutton Institute will always do its utmost to run Fight Against Blight, but it's difficult to promise without secure funding.

"We would always do our utmost to do these tests, but it's difficult to promise without secure funding," he stresses.

A better finance model for FAB is urgently required, says Simon. "If ever there was an argument for improved funding to analyse more samples and get more information back as to what's happening in the field today, this is it," he says. "It's totally absurd they have to go round with a begging bowl every year to fund it."

It's the type of information farmers and agronomists will require to help walk the fine line between minimising fungicide use and cost, while maintaining efficacy and protecting against resistance.

A strategy that considers the risk of new strains and follows best practice guidelines of mixing more than one mode of action will cost around 33% more than typical programmes used in the past couple of seasons, where single modes of action, alternated, were more the norm.

Furthermore, that cost will likely rise by at least 5-6% once mancozeb is out of the equation. From a practical point of view, it's not easy to pick your way through the competing factors of resistance management, cost and efficacy, continues Mark.

"It feels hazardous to try when you know these strains are likely to appear at some point. Why would you put the crop at risk?" he says. "But my fear is we could end up massively overapplying fungicides, which might be the right thing to do [if resistant strains are present], but equally could turn out not to be this season.

"As someone writing recommendations, how do we tread that path of not just over-reacting to perceived risk and not over applying fungicides?" he asks.

Simon agrees this is a challenge. "It's difficult because as an industry we're ▸

According to Simon Alexander, adding localised spore trapping data would theoretically improve the accuracy of forecasting models.

▸ under a massive amount of financial pressure. I'm not prepared to be accused of over-applying — the older I get the more I hate writing a recommendation — as much for the environmental aspect of using chemistry. But I'm also not a gambler."

Both Mark and Simon say they're in a quandary about the best way to construct programmes this season.

Mixing modes of action

Mark explains he's likely to be cautious and use robust programmes involving mixing multiple modes of action. "Once you've decided there's sufficient risk to justify a treatment, you have to protect yourself against the possibility the new strains might be present even though they've not been found yet.

"At some point they will be, so that has to be a mixture of at least two modes of action, whereas last year we were quite happily using and alternating single modes of action."

Simon is more undecided, seeking further confirmation of the resistant strains being in the UK before changing, at least completely, to a mixed mode of action strategy.

"Currently we don't have those strains in the UK, and [historically we have shown] we aren't at risk of selecting any strains out that are resident in the UK for resistance [by following good practice of alternation and appropriate mixing]," he says. "So I'm torn on what to do."

If one of those resistant strains was to be confirmed in the UK, it would be easier to justify making changes, he says, but until then, he's more likely to continue making considered risk assessments that mean using multiple modes of action at some points, but not necessarily all.

Both will continue to use forecasting tools such as Hutton periods, BlightSpy and BlightCast to give an understanding of whether weather is conducive for infection.

Further development of the models would be helpful though — while better weather forecasting beyond three days is perhaps asking too much of model developers, being able to use actual weather for the past 14 days to understand whether there was a risk of blight rather than what the forecast risk predicted would be helpful, explains Simon.

"Currently none of the models do this either because of model design or funding constraints, although Syngenta is working on including it in BlightCast," he acknowledges.

Adding in localised spore trapping data, theoretically, would also improve model accuracy, although previous attempts to make this work were unsuccessful, adds Simon.

Smarter use of tools could potentially help manage costs by helping to pinpoint when intervals could be safely extended, adds David. "If the weather is dry and you're on top of primary inoculum, knocking out dumps and keeping an eye on volunteers you can extend intervals, which is a logical way of reducing costs and chemistry.

"But growers and agronomists will only do that with confidence when the conditions are extremely dry and inoculum is absent."

For Kyran, that could mean rethinking programmes where applications are on fixed intervals. "Sometimes those applications won't be at an optimum time based on the weather and when blight periods are. I think growers shouldn't be too scared about that — it's more difficult to manage but getting a bit smarter about when applications happen could be beneficial to control," he concludes. ■

New blight fungicide

In response to potentially having to mix CAA fungicides with another mode of action to help protect those actives against new strains, Syngenta has launched Evagio Forte for the coming season.

The product co-formulates its CAA foliar blight active ingredient mandipropamid with amisulbrom in what Syngenta claims is an optimised formulation, maintaining overall efficacy of blight programmes while adding a valuable anti-resistance strategy.

Registration trials have proven Evagio Forte delivers effective blight control at a reduced overall loading of mandipropamid and amisulbrom, compared with the rates recommended for the two individual components, says Andy Cunningham, Syngenta technical manager.

"That's important for agronomists and growers looking to minimise overall fungicide active application in the blight programme, especially when using mixes of solo products to tackle resistance concerns.

"Without the evidence of such specific efficacy trials, it's always recommended to use the full rates of any blight fungicide, even when used in a mix with another product," he stresses.

Growers can use three Evagio Forte applications in blight programmes from first flowering at a rate of 0.6 l/ha. For optimum resistance management, it should be alternated with a blight application containing actives from different modes of action.

"It's crucial to take a precautionary approach, utilising more blight spray mixes and alternating chemistry modes of action to minimise the risk of any issue developing," says Andy. "Evagio Forte provides an important additional option to bolster that approach."

Registration trials have proven Evagio Forte delivers effective blight control at a reduced overall loading of mandipropamid and amisulbrom, compared with the recommended rates for the two individual components, says Andy Cunningham.

last word

by Janine Adamson

Accent depundant

Does how we sound impact how we're perceived? Periodically, the question of equality comes knocking at my door but usually, it's regarding being female. It's rarely about my provenance and/or accent, yet this is where I've experienced most discrimination.

Firstly, I am proud to be from North Staffordshire (let's call it Stoke-on-Trent). Albeit not a glamourous location and its reputation is rather poor, but there are significant consequences for those who criticise my realm. And yes, I use my 'discerning' eye to always inspect the underside of a tea cup to check which pottery manufactured it.

But with a passion for my city comes a rather distinctive vocal lilt. I freely admit I've fallen in and out of love with it over the years (both the city and my voice) — I even took elocution lessons to smooth off the edges and improve my pronunciation of 'book, cook and look'.

Back then I was training to be a broadcast journalist and my voice was everywhere including being the newsreader for a local radio station. At the same time, regional accents were only just starting to be accepted on mainstream television.

So off I went to a wonderful lady called Lisa who was exceptional and if nothing else, she taught me how to use my diaphragm to deliver lines with punch. It was what you did if you wanted a 'decent' job in broadcasting, so they said.

Despite this investment, paid for by working in McDonald's, there have been numerous incidents where my lack of plumminess has been commented upon, certainly in the earlier years of my career. The odd word or two would catch me out and similar to an abandoned slipper in the vicinity of puppy Ted, I'd find myself swiped.

It almost didn't matter where I was from specifically, I just wasn't posh enough to hold a conversation with, or maybe it was assumed I wouldn't offer anything worth knowing. It's important to note that by this point in proceedings, I'd abandoned my newsreader aspirations and was working in agricultural marketing.

Having your accent mocked is all fun and games until you realise they're laughing at you and not with you. And whereas we've all been guilty of doing this I'm sure, it can sting, trust me.

I doubt it would have been helped by my age at the time — reverse ageism is a very real thing which I've experienced first-hand. Perhaps this has contributed towards my lack of confidence and hiding behind the crusty sandwiches at conferences!

Either way, I've since learned to use my accent to my advantage and during the years, forgotten my elocution studies bar the diaphragm flexing. At times I find myself the go-to for an 'approachable generic Midlands' voice over whereas gaining the occasional wrinkle has helped abate the ageism problem. I'm a Stokie and I'm proud.

I believe as a sector, we've become a little more forgiving when it comes to socioeconomic factors recently, after all, many farmers aren't as loaded as the public perceive. But I shall stick my neck on the line to say I think we have a lot further to go. Surely it doesn't matter whether you attended public school, have a genuine double-barreled name, ate hummus as a toddler, live in a house with a name not a number, or not?

A dear friend of mine specialises in widening participation at Harper Adams University which demonstrates educational institutes do view this as a problem. She travels around the country visiting urban schools, delivering activities and encouraging young pupils to consider a rural future. In many cases, further education full stop.

But for those of us later down the line, if you know your onions, want to work hard and are a decent individual, why not make agriculture your thing? Money aside (I've always had to pay my own way), I believe much of the problem is having access to the right connections and appropriate networks. That's certainly been the case for me.

It really shouldn't matter if your accent reveals your urban provenance, especially if you're proud of your heritage. Our voice is an integral part of our character, we should all be confident in letting it sing.

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