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Season’s options put on trial

Technical Partners in performance

Bedfordshire grower Russell McKenzie has taken on-farm tramline trials a step further, looking beyond fungicides for solutions that work. CPM visits as he plans his approach for this season.

By Tom Allen-Stevens

They say every arable farm should have at least a field, a patch or a tramline where something new or different is explored. Russell McKenzie, farming on the Cambs, Beds and Northants border, has taken the concept to the next level.

Last year, he drilled 11 different winter wheat varieties across a 2ha area of one of his fields. Overlaid across the four tramlines were seven different disease control programmes (plus an untreated control), and not all of them were based entirely on fungicides.

“I’ve done tramline trials for a number of years which includes the Judge For Yourself trials with Bayer that I’ve been involved with since it started (see panel on p24),” he explains. “They’re a lot of work and you question it sometimes when you’re going back and forth at busy times of the year, putting just 100 litres in the spray tank. But it’s about gathering knowledge and storing it — the value of the data you get

from what works on your own farm in your own situation is second to none, and it can throw up a few surprises.”

As manager of John Sheard Farms, he’s responsible for arable cropping over 995ha, split into five blocks over 17 miles, end to end. The farm’s mostly heavy clay soils are gradually moving over to direct drilling. This, along with cover crops, underpin a deep-seated interest Russell has in using a better understanding of how soils work to build a truly sustainable as well as productive farming system.

Trials results

That’s an element he brought into his trials last season, and this year, he’s planning something similar. Joining him to discuss plans is Bayer commercial technical manager Ben Giles. He’s armed with results from the company’s trial sites across the UK, and from Hinton Waldrist in Oxon and Callow in Herefordshire in particular.

“There’s only so much you can learn from a 12x3m trial plot,” he says. “The beauty of what Russell does is he takes that over a 12x18m area, which is much closer to a real-farm situation.”

The 2020 trial field has only just been drilled — delayed until early Feb as a result of the weather — with 10 varieties in the ground. “We’d have liked to have got more in, but conditions weren’t good enough across the field to complete the plots,” reports Russell.

Three breeders have each put forward varieties, so in the ground are KWS Firefly, Kerrin and Kinetic; LG Spotlight, Skyscraper,

Sundance and Crusoe; and RGT Saki, Gravity, and Lantern.

“This is a little bit of uncharted territory with late drilling of winter cereals for us and although there are the published latest safe sowing dates, there isn’t a large amount of trials or data from planting in Feb.” It’ll be a chance to explore vernalisation, and how to make late-sown varieties perform, he says.

“So it could be an interesting trial and an opportunity to find out what we can achieve on farm and what the parameters are. We learnt a lot from last year’s trial and that provided information we could take forward. That’s what we’re hoping to repeat.”

Last year, yellow rust dominated the plots early on, Russell recalls. “RGT Wasabi was affected, but it was the most bizarre thing — adult resistance kicked in and it pulled through. Gravity fell off a cliff towards the end as septoria came in, but Firefly held up well. It had a wobble, but came through, although it didn’t yield quite as well as it looked.” ▶



Last year, 11 winter wheat varieties were drilled with seven different disease control programmes (plus an untreated control).

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▶ Ben confirms that Firefly was “towards the top end” in fungicide-treated trials at Hinton and Callow. Untreated yield results put Sy Insistor and Theodore as the top performers respectively. “Extase did well at Callow, Skyscraper and Kinetic at Hinton while Sundance and Saki performed at both,” he adds.

Russell picks out Skyscraper and Spotlight. “They were frothy and growthy, which is useful against blackgrass. Spotlight stood better of the two, while we had concerns for Sundance’s standing ability. Crusoe is still performing well.”

Ben agrees. “The issue with Crusoe is brown rust, but that’s relatively easy to control if you’re prepared for it.”

On the treatment side, three of Russell’s plots last year had an SDHI at both T1 and T2 timings — Adexar (fluxapyroxad+ epoxiconazole) and Librax (fluxapyroxad+ metconazole); Aviator and Ascra; Aviator and Elatus Era (benzovindiflupyr+ prothioconazole). Chlorothalonil (CTL) was applied at T0 with mancozeb+ tebuconazole at T3.

“There wasn’t much difference between these leading programmes. They’re generally the highest performing as well, and that’s the interesting thing about the varietal differences — they do differ but you still get a payback from investing in a good fungicide programme on them,” says Russell.

Unusual programmes

More interesting, perhaps, were the more unusual programmes. A non-SDHI treatment saw Amistar Opti (azoxystrobin+ CTL) and Epic (epoxiconazole) at T1 followed by a T2 of Comet (pyraclostrobin), Epic and CTL. “This was on average 0.2t/ha behind on yield, but it was a reflection of the season — if we’d had rain early on, we would more than likely have seen the SDHI programmes performing a lot better,” notes Russell.

But the best performing programme was one that reacted to the season. “With this, we decided not to apply SDHIs at either T1 or T2, as the level of disease didn’t warrant the investment, so followed the non-SDHI treatment. But we then put Librax on at T3,



Russell McKenzie has a deep-seated interest in using a better understanding of how soils work to build a truly sustainable as well as productive farming system.

as June turned progressively wetter. This came out top by over 1t/ha,” he reports.

Ben notes it’s a programme that only came good as a result of the season.

“However, with stronger septoria varieties helping to give better protection at the beginning of the year, shifting the SDHIs to T2 and T3 could be an option to consider. But you won’t know if it was the correct

Do your own trials and Judge For Yourself

Russell is one of around 50 growers who have taken part in Bayer’s Judge For Yourself programme, where Ascra and Aviator are pitched in split-field or tramline trials against the on-farm standard fungicide programme.

“Whenever we’ve done Judge For Yourself, Ascra has always given us the better result, by around 0.2t/ha,” he says.

The trials themselves are branching out, says Ben. As well as providing fungicides to compare on farm, Bayer has helped with taking NDVI images of crops, using drone technology, providing additional specialist advice and bringing farmers together regularly to discuss results. “It’s this interaction that’s a really important part of the programme, and often the stimulus for how it evolves.”

One new aspect introduced, for example, has been to try out Aviator’s approval for use in oilseed rape. “When applied mid-flowering, growers have

found it brings a yield response as much as 0.4t/ha greater than Filan (boscalid) and Amistar (azoxystrobin).”

But you don’t have to be part of Judge For Yourself to carry out on-farm trials. “If you can prove something works for you on your own farm, that’s worth way more than any trials information,” says Ben.

He has some pointers for those looking to give it a go:

- **Choose your site carefully.** Aim for a field or area within it that has a consistent soil type, with uniform yield performance. There should be no drainage or nutrient-deficiency issues, keep your trial areas off the headland, and put them next to each other so you have a comparison line.
- **Keep it simple.** Testing too many variables is unlikely to give you a conclusive result. Keep it to just one or two criteria, such as T1 and T2 fungicides, or the effect of a biostimulant programme.
- **Try to replicate.** Two or three sets of tramlines reduce errors and make a result more statistically robust.
- **Monitor results throughout season.** Take measurements, ensuring they’re representative, of plant and ear counts, NDVI scans if possible, photos, and try taking samples with a SPAD meter.
- **Take care when combining.** Keep the header within the individual plots and measure



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yields over a weighbridge. A grain analysis is also useful.

- **Keep an open mind.** Let the results speak for themselves — a null result can be as informative as one that shows a positive benefit.

Russell notes that on-farm trials help address criticisms about false claims directed at manufacturers that he feels are misplaced. “They do a lot of R&D and if they make a claim for a product, they do so with good reason. But I don’t do trials to prove them wrong, I do so to find out for myself how the products work and how best to use them. Unless you’re going organic, it’s a route I’d advise to anyone.”

Locate your on-farm trial in a crop on a uniform piece of land and keep it simple, testing just one or two variables.





This looks like a year when crops will need a kick start, so trials looking at the role of biostimulants and micronutrients could come into their own.

strategy until after the combine rolls so it's high risk."

With the plots going in very late this year, he doesn't hold out much hope for high yields, though. "The high input programmes are less likely to bring a payback this year, although they should still perform well on crops that were drilled in good time," he says.

"What will really make the difference will be getting the timing right as these are likely to be very varied, especially for crops drilled later than November. Don't look for the node, look for leaf emergence. It'll be proper agronomy and good monitoring that will pay dividends this spring."

Ben's biggest concern is the loss of CTL. "It'll make it hard to protect the strong chemistry we have left and maintain varietal resistance levels. If septoria is your main disease, you should be mindful of varietal resistance, especially wheats with AHDB Recommended List disease scores below 6.5. Growers further west should look for a 7 or 8."

Russell admits he's still unsure how the gap left by CTL will be filled, but is looking towards varietal resistance and bolstering rates of SDHI, as appropriate. Nutrients and biostimulants may also have a role, and a range of these products were also trialled last year. The theory here is to set the plant up as more healthy to encourage it to combat disease.

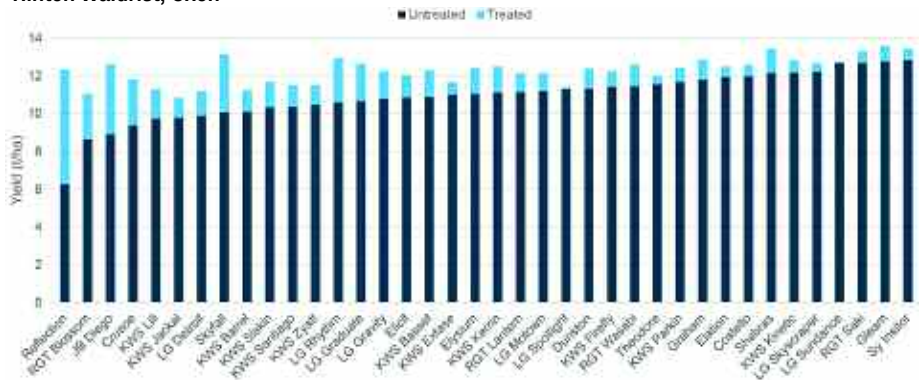
But results are inconclusive, says Russell. "We still don't understand the best position for these products. They have to go on before the plant becomes stressed, but some cost a lot of money and it's very difficult to tell if they're doing anything at all."

It's also difficult to know which products to go for. "I look for those that have been peer-reviewed, so there's a level of scientific endorsement behind their label claims. With many of the branded nutrient mixes, they can be low on specific nutrients I'm looking for, so I have to make additions, and in a lot of cases it's easier to mix your own."

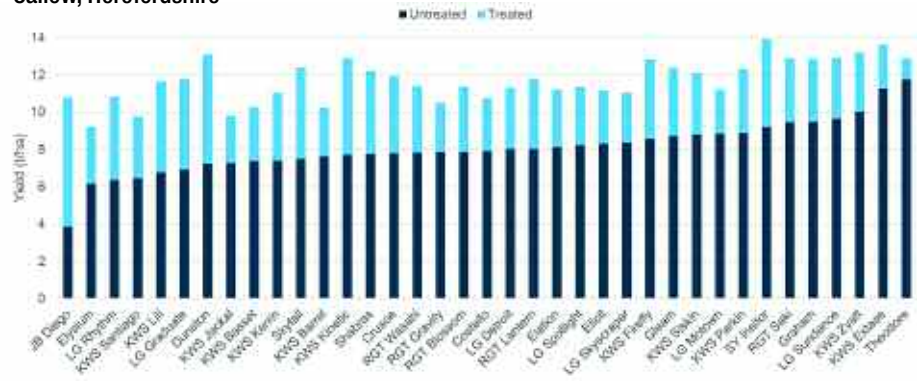
Ben cautions that these treatments are

Winter wheat variety performance, 2019

Hinton Waldrist, Oxon



Callow, Herefordshire



Source: Bayer, 2019; Hinton: drilled 27/10/18; T0 – 0.4 l/ha tebuconazole; T1 – 0.8 l/ha Aviator (bixafen+ prothioconazole); T2 – 1 l/ha Ascra (bixafen+ prothioconazole+ fluopyram); T3 – 0.6 l/ha Prosaro (prothioconazole+ tebuconazole); Callow: drilled 8/10/18; T0 – 0.4 l/ha tebuconazole; T1 – 1 l/ha Aviator; T2 – 1.2 l/ha Ascra; T3 – 1.35 l/ha Firefly (flouxastrobin+ prothioconazole).

no replacement for a proper fungicide programme. "But there's some evidence biostimulants and micronutrients can give benefits if a reduced fungicide programme is used. This could become more common if resistance and legislation restrict our chemistry options — maybe that's something to try in the plots."

Russell agrees there's potential to look closely in the trials at how these products

can perform. "One product that did bring a result last year was Biotrac — we applied it at T0 and T1 and got a 0.2t/ha benefit. It's not huge, but it's something to build on."

"This looks like a year when crops will need a kick start, so these treatments could come into their own. We'll also look at main fertiliser dressings — a little-and-often approach will be our strategy, applying just 40kgN/ha in the first dose," he concludes. ■

Partners in performance

Partners in Performance is the result of a long-standing collaboration between Bayer and a group of progressive growers.

It started in 2011 with the launch of Aviator Xpro when growers were invited to trial Aviator on their farm. In these split-field trials Bayer took a back seat with the only demands being the field area for fungicide comparison and crop yield verified over a weighbridge or via combine yield monitor — everything else was down to the farmer.

Over time this has developed into a club. Each year the farmers meet to discuss results, listen to guest speakers and debate winter wheat management issues.

Farming has always been a challenging business, and with Brexit those challenges have intensified. The margin between profit and breaking even is likely to become even tighter and any incremental gain will be needed for sustainable combinable crop production.

To achieve that the industry needs to work together to share the latest research and thinking, exchange ideas and experiences.

Partners in Performance aims to bring farmers and specialists together to develop solutions to improve crop performance and investment return.

