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The discipline of good decisions

Technical Partners in Performance

A group of Sentry growers meet regularly to discuss how to improve prospects for their wheat crops. *CPM* visits one in the Fens to find out what they've learned.

By Tom Allen-Stevens

There is a perception that the Yield Enhancement Network (YEN) is a competition between growers to achieve the best yield or the highest percentage of potential yield, from your crop. Ed King is one of a group of growers for whom the competition is just a tiny part.

That has nothing to do with where he comes in the rankings, he says, although at 8.9t/ha his crop of KWS Zyatt winter wheat came 301st out of 319 YEN entries last year. Ed is farm manager of three farms run by Sentry, with his base at Wood Farm, Chatteris in the Fens west of Ely. He enters YEN along with seven other Sentry growers. The entries are sponsored by Bayer, which co-ordinates the group, bringing them together twice a year to analyse and discuss results.

"One of the best things to come out of the group is the discussion we have," he says. "It focuses you towards monitoring tiller counts, assessing ears/m^2 and taking grab samples and the like. It would be so easy to say you're just too busy, but then you wouldn't have anything to contribute to the group. So it gives you the discipline, and like so many things, the more you put into it, the more you get out."

Paying dividends

This appears to be paying dividends for Ed — although his yields are relatively low, at 66% he has the highest proportion of potential yield in East Anglia, and within his group — up from 60% the previous year. This has set him on a quest he hopes will bring richer rewards from his soils, which vary from loamy and sandy Fen skirt soils to heavy clays. "I always have the YEN entry on some of the sandier soil so I get a good year-on-year comparison," he says.

Joining Ed is Bayer's Rosalind Martin, who's been co-ordinating the Sentry group of growers (see panel on p24). She's come to the farm to discuss how Ed can build on his involvement with some on-farm trials and analytical tools that'll shed light on where the opportunities for improvement may lie.

First off is a look at the land itself. A trip to the field that'll be entered for this year's YEN reveals a soil that's undoubtedly light, but full of life. "Our main limitation is moisture — we have just 600-650mm of rainfall per year," says Ed, who's been with the farm for four years and now manages over 1000ha for Sentry. "While organic matter (SOM) levels average around 6%, these are lower on our lighter soils, so we've been looking to build this through applying chicken and pig muck and use of cover crops."

The rotation at the 300ha block of land at Wood Farm alternates first winter wheat (quality varieties including KWS Lili, Zyatt and Siskin) with oilseed rape, peas and potatoes over six years. "We've dropped sugar beet because it was marginal on this land, but introduced cover crops in front of spring-sown crops," explains Ed.

He illustrates the difference this has made by dropping into another field in which a cover crop of phacelia and oats has just been sprayed off. Another spadeful thick with fibrous roots reveals the benefits this is bringing to his lighter land.

"We're also reducing cultivations," ▸

The Fen skirt soils are undoubtedly light, but full of life.

Roundup

CULTURAL CONTROL GUIDE

Stepping-up late-sown spring crop weed control

Maize, sugar beet and potatoes require better-than-ever weed control ahead of their pre- and post-em sprays this season to protect them and the rotation from the hardest-to-manage grassweeds

Tackle Challenging Weeds Early

Tough grassweeds into stem extension need the most effective pre-cultivation control as soon as conditions and workloads allow

Integrate Glyphosate Treatment with Cultivations

Glyphosate treatment immediately ahead of planting or as a pre-em (where approved) may also be advisable to tackle late-emerging weeds

Use the Most Active Roundup Formulations

Modern performance-proven Roundup formulations provide the best control of weeds that are into stem extension as well as workload flexibility

Take Sufficient Spraying Care

Particular care with glyphosate rates, nozzle choice, boom height and spraying speed is essential for the most effective treatment

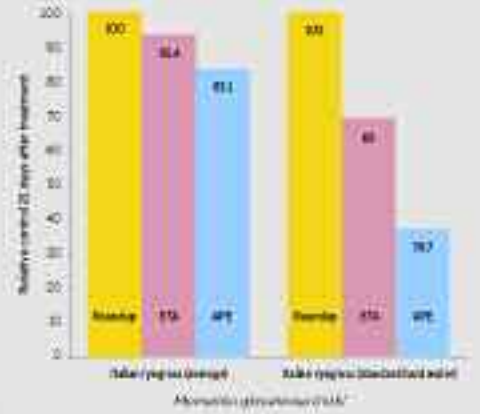
Avoid Rushing into Planting

Only planting when conditions allow the best early crop growth and activity from subsequent residual herbicides will pay dividends

RECOMMENDED LATE - SPRING ROUNDUP RATES

PERFORMANCE WARNING

Lower levels of performance can be expected from the most popular (APE) replacements for traditional (ETA) glyphosate formulations now withdrawn from UK use.



STEWARDSHIP

To minimise the risk of resistance development it is important to cultivate between glyphosate sprays and appreciate that no amount of adjuvant will make-up for insufficient active ingredient.

At 66% Ed King achieved the highest proportion of potential yield from the East Anglian YEN entries.

▸ he continues, as he wanders over to the Grange toolbar that fits in front of the 6m Amazone Cirrus drill. "The low disturbance legs on the toolbar can be set to a depth of up to 250mm and the set-up allows us to drill in one pass.

"It's important not to disturb the soil too much to maintain the SOM, but we find the heavier land slumps easily — it may have a relatively high SOM, but it's respiration is low. The toolbar lets enough air in to keep the soil healthy."

Just a pass with a 6m Väderstad Carrier to chit the volunteers is often all that's needed in front of the drill on the lighter land. While drilling generally takes place in mid-Oct, there's RRR-resistant blackgrass across much of the farm where crop establishment is delayed until mid-Nov.

Ed's monitoring of shoot numbers is beginning to pay off.

The quest to define the 'farmer effect'

There's a stunning array of data a YEN report will give you on how your crop has performed, notes Rosalind Martin. "What you don't want to do, though, is simply file it away. What's great about working with the Sentry group is that they're all keen to make the most of the data they've gleaned."

This is the fifth year Bayer has worked with the group of growers. "We meet twice a year, once just before harvest, when we analyse grab samples, and then again in Nov or Dec, when we take a close look at the YEN reports."

A grab sample is a handful of the crop close to harvest. The whole plant is taken, and by assessing aspects of the plant and the ear you can get a good idea of your predicted yield. Comparing the grab samples forms a core activity at the pre-harvest meeting. "It's not a perfect science, but it does contribute to plenty of discussion, and that's the important bit," she notes.

So far, these discussions have revolved around benchmarking results. When the group gets together at the end of the year, actual yields are compared with what was predicted. Results are ranked and compared with percentage of potential yield as well as results from previous years (see charts below). "In 2019, we not only had East Anglia's highest percentage of potential yield in the group, but also the highest actual yield," she reports. "You can drill down through the YEN reports and pick out aspects that explain the figures and compare them, which drives the discussions."

The plan now is to look in more detail at the in-season monitoring. Rosalind highlights some ADAS research that investigated associations between UK wheat yield and various factors to assess what it is that contributes to a high-yielding crop.

"There are factors to do with soil type and previous crop. Fertiliser and crop variety have surprisingly little effect. You'd have thought most was down to the weather, but actually this contributes only around 38%," she says.

What the research highlighted was that about a quarter of the yield variance was down to the 'farmer effect'. "This is having the discipline to monitor your crops' needs and respond appropriately, and it's a great basis for discussion."

Rosalind's keen to develop tools to support the farmer effect. "We're looking in more detail at the nutrient analysis of the crops, so starting with soil sampling, looking at leaf-tissue analysis and then the analysis of the grain."

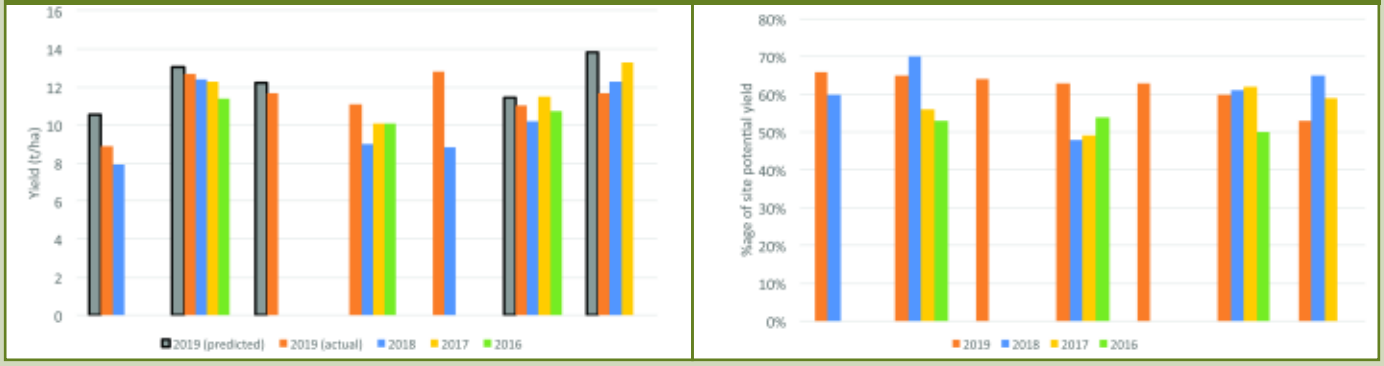
In addition, Bayer is running some tramline trials with farmers in the group:

The Sentry group each take a grab sample of their crop close to harvest and assess it to get an idea of predicted yield and to compare results.

- The use of Aviator (bixafen+ prothioconazole) in oilseed rape now that there's approval to apply it to the crop
- Latent disease testing in wheat to inform fungicide applications, hoping to get results back within 24 hours
- Trials of Bayer's new SDHI Iblon (isoflucypram), subject to obtaining the necessary permits from CRD.

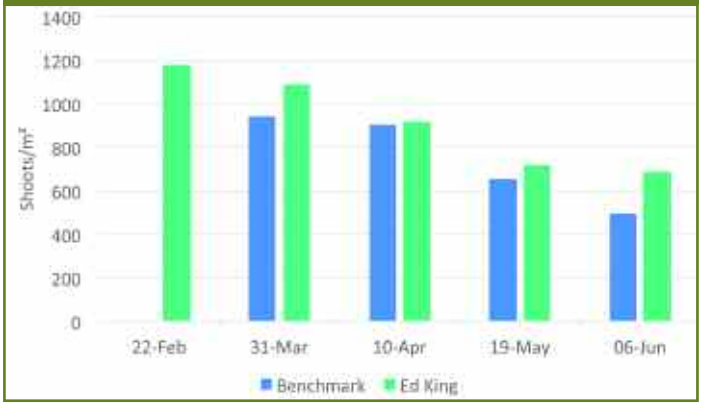
"The group will also have the opportunity to use our digital platform, FieldView, to support analysis of their YEN fields s," adds Rosalind. "It'll be an impressive amount of data we'll have gathered on the crops within the group, so I'm expecting we'll have some really interesting discussions this year that will highlight some key aspects where growers can make improvements."

How the YEN yields compare



Source: Sentry YEN results; Each cluster represents results from a farmer in the group; 2019 predicted results assessed from grab samples collected July 2019.

Wood Farm crop-monitoring results, 2019



Source: Benchmark figures from AHDB Wheat growth guide compared with actual field measurements

Fitted in front of the drill with low disturbance legs, the Grange toolbar puts air into the soil and allows one-pass establishment.

It's the period following establishment where Ed's involvement with YEN is beginning to pay off. "One of the things we monitor as a group is shoot numbers, and we compare these with the AHDB benchmark (see chart above). Comparing my results with the rest of group showed my tiller retention is low — the crop's particularly vulnerable on the light soils and senesces early.

"So last season I looked to increase the seed rate — we drilled at 400 seeds/m² in mid Oct, rising to over 500 seeds/m² in Dec. What you get is smaller plants, but they're more independent and you're less likely to lose shoots as harvest approaches. There's a danger of having too thick a crop coming out of winter, but I'd rather manage a thick crop back than bring on one that's too thin," he notes.

This year, the focus is more on nutrition. The 2019 crop received its N in three doses. "It was variably applied, using application maps provided by SOYL. These took account of the N that had been applied as chicken muck in the autumn. It worked well on our light soils, with most of the N supplied to the crop early on. With a relatively low yield, we don't have to worry too much about diluting the protein in the ear," says Ed.

It's other nutrients he wants to focus on. "We've always been short of manganese, and magnesium has been an issue. Last year's crop received foliar sprays starting in the autumn right up until the T3 timing. This year we want to monitor the tissue testing more closely to see if there are any other nutrients that may be short. One aspect we've noticed is that although there's plenty of phosphate and potash applied in the chicken muck, while the grain analysis shows the P gets into the grain, the K doesn't."

Rosalind suggests an on-farm trial to compare results using Ed's standard farm approach to nutrition with one that's informed by regular tissue testing through the season.

As for disease, yellow rust is the main target, notes Ed. "We look to clear up rust early in the season with a relatively robust T0 spray, and then keep the crop clean, adjusting rates if it's high risk."

Last year, a T1 application of boscalid was followed by the main SDHI applied at T2. In both cases, an azole was also applied along with pyraclostrobin for its activity on rust.

Rosalind suggests that in most situations, a programme based on two new generation SDHIs will do best. "Drilling date and variety is your starting point. Here, Ed is drilling late, but Zyatt has a score of only 6.4 for septoria and a 7 for yellow rust, which should only be used as a guide given the highly dynamic nature of rust populations in the UK in recent years. Depending on the season, you may get away with one SDHI, but that would be rare."

Ed reports that disease appeared to be under control last year. "The trouble we had is that the leaves were curling up from drought stress — the crop senesces too early. We already apply amino acids throughout the season and it's difficult to know whether these are cost-effective — they probably provide a benefit two or three years out of five," he notes.

Rosalind notes that Ascra (bixafen+ fluopyram+ prothioconazole) has a label recommendation for green leaf area (GLA) retention. "In our Judge for Yourself trials, we've used drones to show that Ascra has successfully helped retain GLA."

Rosalind Martin plans to explore the Sentry group's 'farmer effect' through this year's monitoring and on-farm trials.

Ed's signed himself up for a number of on-farm trials with Bayer he hopes will shed light on ways he can further improve the potential of his crop. "I feel we're doing all we can to build SOM and have made progress with shoot numbers, but wonder what else we can do to prolong GLA. The answer may be to monitor the crop more closely and respond to its needs during the season. We've started a WhatsApp group now, and I feel that might be the prompt to ensure I give the job the discipline required to get results." ■

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 challengingbusiness, 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.