



“ 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<sup>2</sup> 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<sup>2</sup> 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



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fit our system and soils, which helps us to plan our variety choice with confidence,” notes Paul.

“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<sup>2</sup> in the spring, against 23.3 plants/m<sup>2</sup> 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<sup>2</sup> 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

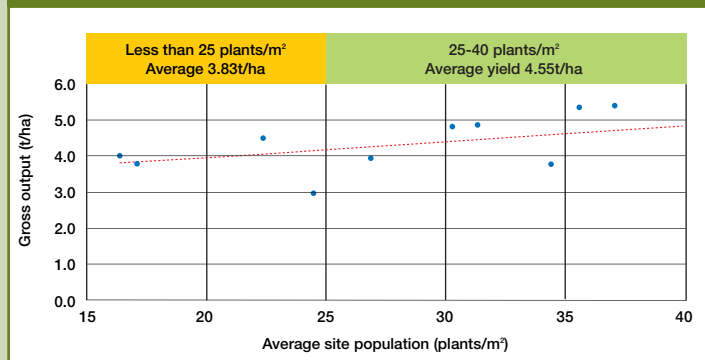
of at least 30 plants/m<sup>2</sup> especially valuable in enabling crops to cope with challenges such as flea beetle larvae and late-pigeon grazing.”

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<sup>2</sup>, 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.

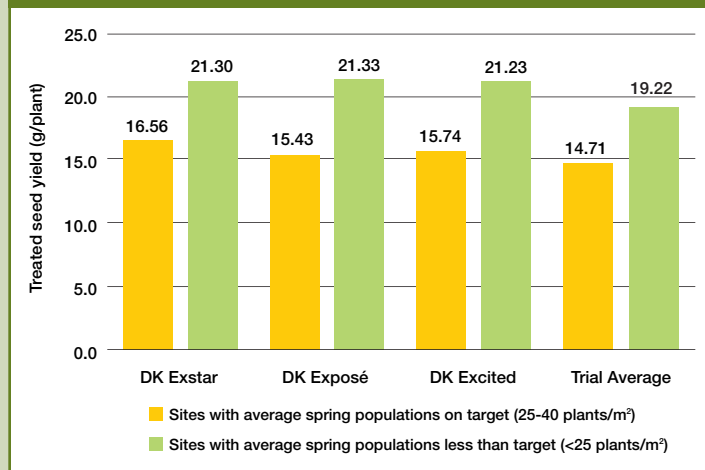
“We require a further season's data to be sure. While relatively high levels of plant losses on some of our sites this past winter will do little for year-on-year performance, they're likely to be really useful in confirming the relative resilience of our hybrids,” he says.

## 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.*

► 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

## 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.

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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



*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.*

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."