

“These aren’t replicated trials, but they are real-world performance.”

Tools to feed the curious mind

Forward-thinking farmers

There’s an extra layer of care that goes into managing the oilseed rape grown by McGregor Farms on the Scottish Borders. *CPM* visits and gathers updates on its 2022 on-farm trials to glean the secrets of building yield potential.

By Tom Allen-Stevens

David Fuller stoops to inspect one of the oilseed rape plants in his strip-trial assessment that sits neatly in its row, uniform with its neighbours. It’s March, so pulling back the leaves reveals a stout crown now bristling with the new growth that will set the canopy over the coming months.

“At this time of the year, it’s very difficult to tell the varieties apart, let alone how they will then go on to perform, although that new growth does look promising,” he says. “We make regular assessments through the season, scoring the plots on vigour, earliness to flower and mature and

then detailed yield assessments.”

He takes his trowel and carefully eases up a plant to inspect its tap root, and it’s a pleasing result — perfectly straight, reaching down over 30cm and with regular branching.

OSR trials

This is one of seven Dekalb varieties David has, growing side by side in 0.4ha plots in this field — a little bit of Scotland on an oxbow of the River Tweed just south of Coldstream. Its deep sandy clay loam soil is among some of the best farmed by McGregor Farms across its 3450ha, spread over 15 farms in the Tweed valley. Mostly undulating medium sandy clay loams, the land is surrounded by hills and varies from 70-190m above sea level.

And it’s capable of pushing out a consistently high OSR yield — a five-year average of 4.84t/ha. Since 2019, David has entered an OSR crop into the ADAS Yield Enhancement Network (YEN) and in 2021 he won the silver award for his crop of DK Expansion which yielded 6.2t/ha — 57% of its 10.8t/ha potential. So how was that achieved?

“The YEN report is useful because it gives you a detailed breakdown of how the crop performed, benchmarked against the other entrants. Essentially, it’s the

number of seeds in the sample that gets you a YEN winner, which comes down to achieving the right canopy structure.”

The strip trials, with the detailed assessments they come with (see panel on p35), help David develop the farm’s variety portfolio. But this is just one piece of the jigsaw that builds into a crop that’s carefully managed throughout the season to deliver its potential.

“We currently have 718ha of OSR and the area stays roughly the same year to year,” he explains. “We grow all hybrids because we value the traits they come with. Pod-shatter resistance in particular is important for us — August is the wettest month, and wet-to-dry conditions can make the crop go brittle.

“Where a variety doesn’t have the



There’s a stout crown bristling with the new growth that will set the canopy over the coming months.

pod-shatter trait, we see a lot of losses and plenty of volunteers in the following stubble. Often at harvest we've had to break off OSR to get started on the wheat and need to know the seed will still be in

the pods when we return to it.

"Although phoma is rarely a problem for us, the *Rlm7* gene for stem canker resistance means we don't have to worry about it, or spray to protect

against the disease. Similarly, turnip yellows virus resistance (TuYV) is another one coming through on newer hybrids that delivers peace of mind. Clubroot is a problem with brassicas historically grown ▶

Packed with potential, but flowering date differs

By early May, some of the varieties in the McGregor Farms strip-trial assessments are reaching the end of flowering. "All of them are strong and robust with not much difference between them, and branched well to put out a good canopy. So we think we have plenty of potential across the plots," reports David.

"One thing I have noticed, though, is a big variation in flowering. DK Extremus was quick to flower, with DK Expansion not far behind. The newcomer, DK Exposé was the last to come into flower and notably later than the rest."

Early flowering is not a characteristic David particularly favours. "Last year we had a lot of late frosts which appeared to damage those early to flower. Having said that, this didn't show in yield results, so may just be perception."

David's been sharing the assessments of the plots with Bayer's Richard Williams. "We put current, commercial varieties along with one or two newcomers," he says. "This year the brand new one is DK Exposé, that also has TuYV resistance, along with DK Excited and DK Expectation. Then there's DK Exsteel, DK Exstar, DK Extremus and DK Expansion."

Selected growers across the UK have been working with strip-trial assessments of Dekalb varieties for nearly 20 years. There are 12 sites with David's currently the furthest north. There's one in Norfolk and in Suffolk, two in Hampshire, two in Wiltshire, a site in Herefordshire, Worcestershire, Staffordshire, and two in Shropshire.

"We provide enough seed for blocks of up to 1ha to be grown side-by-side. We recommend up to 50 seeds/m² looking for a final plant stand of 25-35/m², but leave the actual drilling date up to the grower — it's good to have a spread. The management of the crop is also up to the grower, to ensure they are grown

as close as can be to standard farm practice, although all of the UK growers involved pay particular attention to detail with their OSR," notes Richard.

The plots are then closely monitored throughout the season and given scores under a visual-assessment protocol that's repeated on similar sites across Europe to ensure data has real comparable credibility, he points out. Plant counts, vigour, uniformity, disease presence and development before winter are assessed in autumn. In early spring, regrowth and stem elongation after winter are scored, then earliness of flowering, lodging and maturity. Before harvest there's another lodging assessment, along with checking for stem-based diseases, then final yield, oil content and moisture are assessed.

"We've found Exsteel the most vigorous in autumn, making it ideal for later plantings. Exposé and Exstar are slightly slower with Exposé having a squatter growth habit, so more flexible with their establishment window. Both

Extremus and Exstar tend to be early to flower while Exposé and Expansion are later," summarises Richard.

"Exposé does look promising, relatively short and very stiff with good disease resistance, including TuYV. It flowers for longer, and that's where we think it puts on the yield," he says.

The strip trials go hand-in-hand with small-plot work carried out on all Dekalb varieties, continues Richard. "We work closely with strip-trial growers so get a really rounded picture on how the varieties perform, and I think that helps all growers get the best from the Dekalb lines — it's when a grower sees a variety perform in front of them they get the proof they require to grow it well.

"We're now introducing variable-rate N work into the trials and looking at biostimulants, making good use of Bayer's FieldView to assess results. For next year, we have more candidates with TuYV resistance and two promising lines with clubroot resistance. Look out also for some really interesting Clearfield and HOLL varieties



It's when a grower sees a variety perform in front of them that Richard Williams believes they get the proof they require to grow it well.

coming through," notes Richard.

The strip trials equip David with the tools he can use to feed his curiosity on how to manipulate the crop to get the best out of it. "While the AHDB Recommended List provides useful data, it has its limitations," he says. "These aren't replicated trials, but they are real-world performance. And with rapeseed prices in excess of £800/t, it's worth putting time and effort into every extra seed you can tease out of the crop."

	DK Expectation	DK Extremus	DK Exsteel	DK Expansion	DK Excited	DK Exstar	DK Exposé
Product characteristics							NEW
Oil content (%)	45.2	45.4	45.5	44.5	45.6	45.3	45
Earliness at regrowth	Mid	Mid-early	Mid-late	Mid-late	Mid	Mid	Mid
Earliness of flowering	8	7	6	5	7	6	5
Earliness of maturity	6	6	5	6	6	6	5
Plant height	5	5	6	5	4	6	4
Lodging resistance	[8]	8	8	9	8	9	9
Stem stiffness	7	8	8	8	7	8	8
Phoma resistance	7	8	8	7	8	8	8
Light leaf spot resistance	7	7	7	6	6	8	6
Pod-shatter resistance	Y	Y	Y	Y	Y	Y	Y
TuYV resistance	Y				Y		Y
Coldstream strip-trial results 2021/22 season							
Vigour (Nov 21)	8	8	8	7	6	6	7
Uniformity	7	7	7	7	6	7	7
Development before winter	7	7	6	7	6	5	6
Early flowering (April 22)	6	7	4	3	5	6	1
<small>Source: Dekalb earliness at regrowth data; DK Expectation – AHDB Recommended List Winter oilseed rape 2022/23; DK Extremus – AHDB 2021; DK Exsteel – AHDB RL 2021/22; DK Expansion – AHDB RL 2022/23 Control Variety; DK Excited – Dekalb private trials data 2021; DK Exstar – AHDB RL 2017/18; DK Exposé – NL1 2020 and NL2 2021; Coldstream results – Dekalb private trials data, comparative for site only; Scores (1-9) high figures indicate the variety shows the character to a high degree; [] = limited data.</small>							

Forward-thinking farmers



An even plant stand is important, as is good autumn vigour, but strong spring regrowth is not quite so critical.

► quite extensively for livestock feed in the area, and we look to grow varieties that have resistance on land we know to be infected.”

Currently in the ground, aside from the strip-trial assessments, are Aurelia, DK Expansion, DK Exsteel, DK Exstar, DK Explicit and Crocodile for clubroot. “We generally grow two or three varieties on a look-see basis to develop the portfolio, and this is where the strip trials really help to put characteristics side by side for comparison and identify lines we’ll find useful.”

Growth characteristics in particular are aspects David keeps a close eye on. “A lot of the yield comes from establishment, so an even plant stand is important. Three quarters of our crop is grown after winter wheat, so first and foremost, I look for good autumn vigour. Strong spring regrowth is not quite so critical for us as we don’t want the crop to develop too soon and get damaged by late frosts.”

Coming into the spring is where flowering and maturity characteristics of the variety come into play. David looks for a variety with a steady spring growth and one that won’t come into flower too early. He takes comfort in a long flowering period, however, and is happy for the crop to mature late, so long as that doesn’t push harvest into an unnervingly late window.

With the genetics set, the rest is down to management. Two 7m Simba SL 700s break the ground and establish the crop in a one-pass system. The legs are generally set to 250mm depth, with starter fertiliser dribbled behind, and the second set of discs in line with the legs. Following these is a Double-D ring press that the seed is put in behind, at a row spacing of 450mm, again, in line with the legs. A light harrow covers the seed and an Aqueel roller finishes off the job.

“The Aqueel runs clean in wet conditions and holds critical seedbed

moisture in dry conditions. But if it’s particularly dry, a set of Cambridge rolls are used as well.” Cabbage stem flea beetle hasn’t been a problem for crops in the area, he reports.

Good establishment

“We aim to drill all 700ha in a week, starting after 20 August and finishing by 1 September — that’s our critical window,” says David. “Good establishment is crucial, and we look for the right soil conditions and the right plant population with even spacing and germination. We want 25 plants/m² coming into the spring, so a rate of 35-40 seeds/m² is generally sown.”

The starter fertiliser puts 19kgN/ha with 27kg/ha of P near the seed. “We’re often short of magnesium and apply this in the autumn with boron. Around stem extension, the crop also gets manganese, molybdenum, extra Mg and Bo,” he adds.

“We still find a pre-emergence herbicide the more reliable form of broadleaf-weed control, so apply quinmerac and metazachlor. Grassweeds haven’t been an issue in OSR until recently, but we’re now finding brome and rat’s tail fescue increasingly difficult to control, so apply propyzamide late in the season. We’ll also apply prothioconazole for light leaf spot as late as we can travel.”

David relies on an N-Sensor on its Absolute setting to tailor nitrogen rate to the crop growth in spring. This results in around 200kgN/ha applied in two splits as liquid 30%N with 9.5% SO₃. The first goes on towards the end of February with a slightly larger dose a month later.

“LLS is the main disease concern in spring. An application of tebuconazole with azoxystrobin is applied at yellow-bud stage in mid-March, which also helps to shape the canopy. We’ll follow up three

weeks later with a boscalid-based application that also takes care of sclerotinia,” he says.

“We have trialled Aviator (bixafen+ prothioconazole), using Bayer’s FieldView to record it and assess the results, and that worked well, so it’s an application we may look to use more of in future,” he notes.

Just as an even establishment and early season management are critical to success for OSR, David believes how the crop is treated towards the end of the season has an important role in the final result. “Attention paid to getting the canopy right makes a huge difference, and we do consider greening.

“While fungicide applications are mainly for disease control, they also have an effect on branching. Then we want to make the most of the sunlight during June and July, so try to keep the canopy going for as long as possible, holding off the glyphosate desiccation until as late as we dare. Pod-shatter resistance again provides a little reassurance here.

“We find that when you set up a crop with the genetics that fit the system you’re looking to follow, then monitor it closely and give it the attention it deserves, that’s when a good average OSR crop becomes a YEN medal winner,” concludes David. ■



The newcomer is DK Exposé, which comes into flower later, but flowers for longer.

Forward-thinking farmers

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

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

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There is much to look forward to and this series of articles will look at how partnership between farmer and industry can achieve this together.





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Source: AHDB Recommended List 2022/23.

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