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The essence of a robust defence

Technical Battling the beetle

In the struggle to get respectable crops in the face of attack by cabbage stem flea beetle, the remarkable resilience of growers shines through. *CPM* picks out some of the success stories.

By Tom Allen-Stevens and Rob Jones

Two farms in different parts of the country both suffered badly from cabbage stem flea beetle over the past two seasons, but neither lost a significant proportion of their oilseed rape crop as a result.

On each farm, the crops have very different establishment approaches, but neither made radical changes to their systems to deal with the problem. The focus instead was put on getting the basics of OSR establishment spot on for their situations.

Strip-tilled stubbles

Flea beetle pressure at Springfield Farms in Worcestershire’s Vale of Evesham was exceptional last season. The black legions marched out of the grain store in an endless stream after the 2019 harvest, presented serious challenges throughout establishment, and left significant spring larval burdens.

As if this wasn’t enough, testing by

Rothamsted Research showed 75% of the beetles were resistant to pyrethroids locally, and one of the wettest winters in recent memory did OSR on their heavy clay ground no favours whatsoever.

Even so, manager Ben Knight brought all his plantings to harvest. And by doing nothing different from his normal oilseed rape practice either.

Admittedly, the 2020 harvest struggled to deliver 3.5t/ha against the previous 4.2-4.5t/ha 10-year average. However, with lower pest pressures and less extreme autumn and winter weather this time round, he’s confident of getting performance back on their 4t-plus track.

“Horrendous as 2019/20 was, it really only reinforced the importance of a number of key things we’ve learnt about OSR establishment over the years,” explains Ben.

“Since Martin Lole bought the farm in 2005, we’ve been on a determined journey to reduce cultivations and improve soil structure and health here. Hand-in-hand with this has been the development of the Mzuri system of strip tillage to create the best nursery seedbeds for our crops while moving the least amount of soil.”

Springfield Farms grow OSR every fourth year followed by wheat, a multi-species winter cover and spring legume, then another first wheat. It’s drilled in mid-August immediately behind careful combining for the best possible residue chopping and spreading.

On top of the increasingly resilient and biologically active soils built up over the past 10 years and only tilling where you sow, Ben identifies long stubbles, fast-developing

hybrids, consistent sowing depths, wide row spacings, and accurately placed seedbed fertiliser as their key ingredients for OSR success.

Right from the word go, the Mzuri focus has been on creating a suitable micro-climate for young seedlings as well as protecting soil from erosion, capping in heavy rain and moisture loss from the sun and wind by drilling into 200-250mm of standing straw.

To preserve the stubble and prevent it interfering with sowing Springfield Farms employ RTK to drill accurately between the previous crop rows. Rapid root penetration is encouraged by a narrow, low disturbance leading leg on their Pro-Til drill run at between 150-200mm depth depending on soil need. This also maximises the



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breakdown of any residual herbicide chemistry in the seeding zone that could interfere with establishment.

Diammonium phosphate (DAP) is placed behind the legs set at 66cm centres and the soil reconsolidated ahead of seeding with independent controlled-pressure, contour-following coulters and a press wheel for final consolidation.

“Being the development testbed for Mzuri is really valuable in allowing us to evaluate different establishment options in a thoroughly scientific way,” says Ben. “For instance, we know we can get a useful yield advantage from wide row spacing to give the fast-developing hybrids we also know perform best the space they need to build the most efficient, light-intercepting canopies.

“As well as speed of development in the autumn, we’ve found earliness of regrowth in the spring crucial in enabling our crops to grow away from flea beetle larvae, not to mention pigeon damage. That’s why DK Expedient has been our mainstay for the past three seasons. We’ve yet to find a variety with more of the all-round get up and go we really value.

“We sow the hybrid down to 30 seeds/m² to avoid over-crowding in our wide rows. Consolidation from the drill means we get no advantage from rolling. We’ve given up using a pre-em to take away any restriction to early crop growth too. And, things would have to be dire for us to use any insecticide.

“Our trialling this season has shown much more adult beetle grazing from drilling at the start of Sept than from our preferred mid-Aug slot,” he reports. “Even so, vigorous fast-developing seedlings all coming through at once again proved more than a match for the little blighters.

“We remain to be convinced of the distraction value of the buckwheat companion we applied with a Stocks seeder on the Pro-Til across half the later-sown field; probably because our long stubble does

enough of a job here anyway. It was very fast to establish, though, and we are keen to see what soil health benefits it can give as a true companion.”

Given their rotation and establishment experience, Springfield Farms have no plans to move drilling any earlier than mid-Aug. Nor are they afraid to sow in the absence of rain, never having found insufficient moisture immediately beneath wheat stubble with their single-pass, minimal disturbance drilling approach.

“Flea beetle has certainly been a challenge for us,” Ben concludes. “But it’s one an establishment regime that nurses the young crop by retaining sufficient moisture, giving it the best conditions under the surface, and protecting it as well as possible above ground has proved well able to deal with.”

Considered cultivations

Despite suffering treacherous autumn/winter conditions and coming under a barrage of attack from cabbage stem flea beetle, Tim Barrell’s crop of DK Expansion OSR yielded 5.0 t/ha last year. This year he’s switched to DK Expectation, and although it’s faced the same hammering, looks as though it’ll live up to its name.

“We’ve been lucky,” he claims. “There’s no doubt the crop’s been attacked — you can see there’s larvae in the stems now. But the plants seem to be strong with really good roots, and they’re doing us proud. They’d be heading for a phenomenal yield if it wasn’t for CSFB.”

With 230ha based at Elm Farm, near Shipdham, Norfolk, Tim has developed the arable system with the help of agronomist Rob Norman since the dairy side of the family business split away in 2015. “The farm had switched out of OSR because we were growing maize for the dairy that provided the break. We introduced spring beans, which also helped against the blackgrass, but needed an additional break crop, and rapeseed prices improved,” he explains.



Dissection of the stems in early spring reveals the crop of DK Expectation at Elm Farm is under pressure from CSFB larvae.



Although there’s no doubt the crop’s been attacked, Tim Barrell has ensured he has strong plants with really good roots.

So the crop came back in for the 2019 harvest — DK Expansion yielding 3.7t/ha. He was keen to improve the yield, but conditions that autumn were far from ideal. “We drilled late, following spring barley — it was the start of Sept and it was dry.

I was worried the crop wouldn’t emerge, and if it did that it would be taken by CSFB.”

So Tim focused on ensuring the best establishment he could give the crop. A generous helping of pig muck laid the foundations on his medium clay loam soil. This was worked in with a 4m Kongskilde Vibroflex, followed by a 3.2m Discordon.

“We got a good seedbed, but it was dry, so we took the 4m Horsch CC drill through steady and drilled relatively deep into more moist soil, with a slightly higher seed rate. The crop came up slowly, and I was still worried, but it was an even germination and it came to something. By the end of the autumn it was flourishing.”

Tim has no doubt it was under pressure from CSFB. “They were all over the grain carts at harvest and the crop was getting hammered as it emerged. We had to spray several times with pyrethroids.”

A dressing of diammonium phosphate (DAP) in late September also helped pull the OSR through. “When the crop woke up in spring, it had had a good kick start, and that was a key factor. We gave it two dressings of SingleTop (27N + 12 SO₃) and it never looked back, despite the pressure from CSFB larvae,” he says.

The reward came at harvest, with a crop that yielded 5.0t/ha. “I reckon the pod-shatter resistance helps here. Our John Deere combine doesn’t have an extended bed on the 6.7m header, so losses can be quite high.”

Autumn 2020 was quite different at establishment. DK Expectation has taken the place of Expansion across the 39ha, offering ▶

Trials confirm flea beetle management value of longer stubbles

Drilling OSR into a longer cereal stubble can significantly reduce damage from adult cabbage stem flea beetle regardless of sowing date or pest pressure, according to CSFB farm innovation group trials run by ADAS for Bayer this season.

Consistent reductions of between 25-31% in shot-holing were recorded from direct sowing the vigorous, fast-developing hybrid, DK Excited into stubbles of around 30cm against those of 15cm in the field-scale strip trials on three farms in Essex and Cambridgeshire (see chart right).

Drilled from 12 Aug to 6 Sept, all the trial fields had sufficient moisture levels during establishment, with the earliest sown incurring noticeably less flea beetle damage overall than the later-drilled sites.

Less CSFB grazing during early establishment also meant the crops sown into longer stubbles went into the winter with taller plants and generally higher plant populations

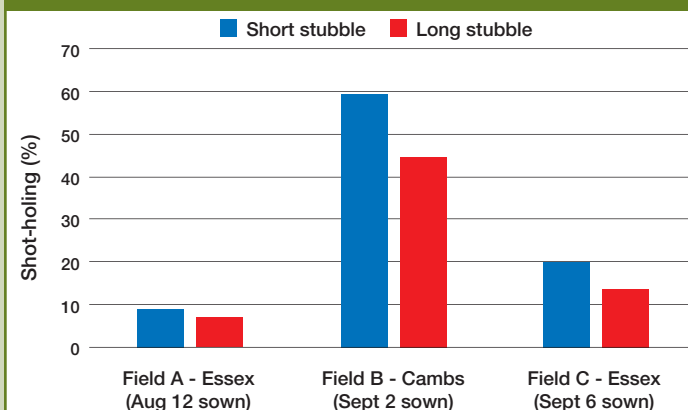
than those sown into shorter stubbles.

“This work provides the first independent scientific evidence of the anecdotal value of longer stubbles in systems which already have the CSFB management advantage of minimal soil surface disturbance,” notes Bayer OSR trials co-ordinator, Richard Phillips. “It confirms that alongside other measures, leaving longer stubbles can help crops tolerate adult grazing.

“Together with earlier sowing, the pioneering national study of cabbage stem flea beetle management we ran with more than 220 growers across the country last season highlighted the importance of hybrid varieties, in general, and fast-developing as well as vigorously establishing hybrids in particular in coping with the pest.

“Leaving longer stubbles on its own was not identified as a particularly successful management technique in this study. So, its

Adult CSFB damage sown into different lengths of cereal stubble



Source: ADAS/Bayer CSFB management FIG Trials 2020; cv DK Excited

success is likely to depend on careful integration with other cultural controls.

“Interestingly, late November assessments in our trials also revealed higher larval populations per plant in the longer stubble sowings on two of the three farms,” he adds.

“This is something ADAS believes warrants further investigation. It may further underline the importance of techniques like growing hybrids that develop earlier in the spring and winter defoliation considered to be valuable in reducing subsequent larval damage.”

► TuYV resistance and a higher yield. “We gave the crop the same method with the pig muck and cultivations, but drilled on 24 August, going more shallow this time. The day after, it rained, so we didn’t even need to roll.”

This time a trap crop of volunteer OSR was in a field adjacent to the new crop. Tim’s unsure how much of a help it was, although the new crop appeared to come under the same pressure from CSFB, and this was followed by an even greater onslaught from the weather. “We’ve had twice as much rain as last year — it started on 25 Sept and hasn’t stopped. But again, the OSR has

done really well and despite a bit of flooding we have an even crop that doesn’t seem too affected by the CSFB larvae.”

Having come well through two challenging autumn/winter seasons, Tim is upbeat about prospects for the crop. “I think good establishment is the key. The pig muck helps here, and achieving a good seedbed. It’s also down to the variety — the DK hybrids have been performing really well, putting on strong autumn and spring growth.

“I don’t think CSFB is going away, and there doesn’t appear to be a solution on the horizon, so if you find a formula that gets through, that’s the one to go for,” Tim concludes. ■



The current crop of DK Expectation looks as though it will live up to its name.



Following a good kick start in the autumn, the 2020 crop of DK Expansion never looked back.

Battling the beetle

Building on our well-received 2020 series with leading UK researchers and advisers, CPM and Bayer are working together again this season to share the latest experience in combatting cabbage stem flea beetle — this time with growers up and down the country who are successfully doing so.

This is part of Bayer’s role in providing trusted support to OSR growers and their agronomists that goes well beyond the most

robust and dependable varieties that have always been the Dekalb trademark. We hope this helps everyone take advantage of the opportunities offering them the greatest value.

By doing so we are confident the UK can effectively minimise the threat CSFB presents, restoring faith in winter OSR as the best cereal break even amongst those who have been worst hit by the pest.

