Early benefits outweigh risks

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Technical
OSR

Could the secret to growing OSR successfully be early drilling? *CPM* consults the authors of a new guide that brings together advice on the challenges, potential pitfalls and how to overcome them to make the most of the early-bird slot.

By Lucy de la Pasture

The past few years have given the oilseed rape crop a real shake-up. The relentless pressure from cabbage stem flea beetle, compounded by weather events and little in the way of control options, has led some growers to abandon the crop altogether and others to cut back considerably on the area devoted to OSR.

Many who have stuck with the crop have opted to plant earlier than the traditional period of mid to late August, with some OSR going in the ground as early as the end of July in 2020. The thinking behind the move has been to get the crop well established before the main migration period of CSFB, with plants that are big enough to withstand any adult feeding damage.

Such a change of tactics brings both challenge and opportunities and these are explored in new comprehensive guide to early drilling OSR, which has been jointly produced by Bayer and Opico. The guide takes a logical look at rotational, varietal, machinery and management priorities based on advice from the two companies as well as experts at ADAS, NIAB and Wright Solutions.

Larvae numbers

While early drilling may avoid the threat from adult CSFB, there's evidence that the practice can lead to higher numbers of larvae in plants according to analysis of 15 years of data, from more than 1600 sites, by ADAS in a three-year AHDB-funded project.

"This is potentially because there's plenty of plant growth available to support adult feeding and egg-laying over an extended period," explains ADAS plant physiologist, Dr Sarah Kendall. "Although much of the focus for CSFB management has been on early crop survival, minimising the damage from larvae is just as important."

Earlier drilling also brings other agronomy threats, such as cabbage root fly and turnip saw fly, which are known to cause serious young brassica losses and are as difficult to control as CSFB. Longer periods of higher temperatures ahead of winter also add to the threat from both light leaf spot and clubroot, as well as increase the pressure from verticillium wilt and turnip yellows virus (TuYV).

The extra autumn growth means managing the canopy is another important consideration for early drillers. A more forward biomass increases the risk of premature stem extension, susceptibility to damage from frost and snow, and the risk of lodging.

So is it a case of switching from one CSFB threat to another? As long as the potential challenges are recognised and the

Sarah Kendall says that to grow OSR successfully, it's necessary to integrate the most useful CSFB cultural controls carefully into the most productive management regimes.

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crop's agronomy adapted accordingly, then that's not necessarily the case.

"We can't afford to throw key elements of proven best management practice out of the window in dealing with flea beetle. Otherwise we'll end up with difficult-to-manage crops that will always struggle to deliver the yields that make them worth growing," explains Sarah.

"Instead, we have to integrate the most useful CSFB cultural controls carefully into the most productive management regimes. If this means changing when or how we establish or manage the crop we must adjust other elements of our agronomy to fit.

"Regardless of when oilseed rape is sown, there are a number of essentials to achieving reliable and even establishment.

Increasing the plant population hasn't been found to reduce the number of larvae/plant, it only serves to increase larval numbers/m^2. Seed rates also need to be carefully matched to row widths to minimise the inter-row competition which can negatively affect performance."

Early vigour

Variety selection is another factor to consider. The guide suggests variety should be matched to drilling date and conditions, taking into account characteristics such as speed of early development and early vigour.

OSR breeder Matthew Clarke believes some OSR varieties are better placed than others to take advantage of the opportunities early drilling offers and counter some of its challenges.

"A vigorous establishment ability is particularly important to get the crop through its most vulnerable stage ahead of the peak of flea beetle migration. But the most rapid development should be avoided to reduce the risk of excessively forward crops going into the winter.

"Having said that, varieties really need to be faster-than-average in their autumn development to give them the best chance of growing away from beetle grazing, especially where establishment conditions are less than ideal," he adds.

There's also potential to select for varietal characteristics which can help mitigate problems from ▸

Early sowing allows OSR plants to become well established before the main migration period for adult cabbage stem flea beetle.

The tight early drilling window puts the premium on careful planning and management to ensure success without compromising harvest.

▸ a high larval load in spring. "Hybrids which are earlier or faster to grow in the spring provide valuable extra tolerance to the higher levels of CSFB larvae that can be expected from earlier drilling," says Matthew.

Another agronomic characteristic to bear in mind is standing power, given the inevitability of higher biomass from more forward crops, based on the best combination of stem stiffness and lodging resistance. Good light leaf spot resistance will help offset the increased risk from the disease, together with high levels of phoma resistance for the greatest autumn fungicide flexibility, he suggests.

He sees verticillium wilt and TuYV resistance as extra safeguards here too, although only in addition to the more important priorities.

Matthew unsurprisingly has some suggestions from the DeKalb portfolio. "DK Exstar is about the best all-round variety you can get for early drilling," he says. "It combines vigorous establishment with rapid — but not too fast — autumn development and is fast to regrow in the spring. Exstar has 8.0 ratings for both light leaf spot and phoma resistance, in combination with standing power and stem stiffness, and it shows good resistance to verticillium wilt in ADAS trials.

"DK Excited delivers almost as much early drilling strength, with TuYV resistance as well, while DK Extremus provides the additional value of early spring development," he adds.

"The higher establishment rates likely from earlier sowing make it especially important to avoid seed rates that might lead to OSR populations of more than 40 plants/m^2," highlights Bayer commercial technical manager, Darren Adkins.

"Early drilling varieties with strong phoma resistance will give more flexibility to delay autumn fungicide treatment, targeting sprays more effectively against light leaf spot. However, an early autumn application of metconazole may be necessary to regulate the growth of crops that are particularly forward — especially if they are also very thick.

"Equally, relatively large canopies coming out of the winter put the onus on careful spring nitrogen management to achieve an optimum Green Area Index (GAI) of 3.5 at flowering, as well as effective growth regulation in the spring."

Establishment timing

The past few seasons have highlighted the role the weather has to play in the success or failure of OSR and none more so than at the establishment timing, where adequate soil moisture is crucial. Sowing in early August also means there's very little time after harvest to manage crop residues, control grass weeds and correct any structural problems in the soil.

That means time has to be the primary consideration in establishing OSR within a tight early window when harvest workloads are at their peak. This puts the premium on careful planning and management to ensure success without compromising harvest, says independent soil management specialist, Philip Wright.

"Because you have so little time, it's more important than ever to get the essentials of OSR establishment right," he says. "Soils should be well-structured and must have sufficient moisture. Otherwise, don't even think of drilling."

Philip says preserving moisture is critical and effective consolidation will also help achieve the best seed-to-soil contact.

"With the possible exception of winter barley, there's unlikely to be enough time ahead of drilling for cereal straw to be baled and removed. So it needs to be thoroughly chopped and evenly spread. As well as deterring cabbage stem flea beetle, leaving a long stubble will help here.

"Single pass establishment is key, with speed balanced by sufficient care and precision in seed placement. A consistently shallow sowing depth is vital for the rapid and even crop emergence you're aiming for, meaning the seed must be 'drilled' rather than just sown. And seedbed nitrogen and phosphate are likely to be especially valuable where minimal soil disturbance and previous crop residues temporarily restrict available nitrogen," he comments.

Where the soil is in good enough condition, with an unrestricted structure for root penetration and drainage, cultivations adviser Glenn Bootman of Opico suggests no-till drilling to both minimise soil movement and maximise sowing precision.

An increased risk of larval damage is one of the challenges when drilling OSR early but can be mitigated by judicious seed rates and varieties with spring vigour.

Should there be significant soil structure concerns and any harvest trafficking, he recommends tackling this with low disturbance subsoiling as part of a tailored seeding regime. The best kit involves narrow legs and appropriately-winged points to lift and stretch rather than 'boil' the soil, he advises.

"Whatever approach you take, you should always sow the seed through coulters into soil, re-consolidated after any disturbance, to provide sufficient depth control and seed-to-soil contact," he stresses.

"Whether no-till drilling or tailored seeding, machines should be able to cope with both long stubbles and significant levels of trash, as well as work efficiently in these conditions. Where possible they should allow fertiliser to be accurately applied in the seeding zone and have the flexibility to sow a companion crop and apply slug pellets in the same single operation."

With disc coulters for accurate depth control, rubber front depth/press wheels to roll down stubble or cover crops, notched seeding coulters for minimal soil disturbance and bogie-style press wheels for consistent slot closure, Glenn reckons the Sky EasyDrill offers the ultimate in no-till control. All the more so, with twin distribution lines enabling accurate seed and fertiliser placement at different depths; additional mini-hoppers allowing up to four products to be applied at the same time; and flexibility to vary row widths from 16.6 to 33.2 or 49.8cm.

"For tailored seeding, you can't beat the HE-VA Evolution either," he says. "Serrated disc openers create the slot, deal with trash and reduce soil burst. They are followed by

15mm wide low disturbance 'stealth' legs with a shallow wing angle and leading nose for subtle soil lifting.

"V-profile rollers reconsolidate the soil ahead of seeding through double-disc coulters, with press wheels giving accurate depth control. Fertiliser can be placed behind each leg and a twin hopper Multi-Seeder also enables companion-crop sowing or slug pelleting at the same time."

Better crop survival

The value of getting OSR off to an early start has been underlined by recent studies. The latest National Cabbage Stem Flea Beetle Management Study conducted by Bayer, ADAS and NIAB with almost 200 growers across the country shows earlier sowing led to noticeably better crop survival to harvest than drilling in the traditional late August/early September slot; an almost identical trend to the very much more challenging 2019/20 season.

"Providing there's sufficient moisture, our own substantial annual grower surveys have consistently shown early drilling enables crops to tolerate levels of flea beetle grazing that might otherwise devastate them," points out NIAB break crop specialist, Colin Peters.

"In 2019, we saw over two thirds of crops sown before mid-August incurred mild, little or no autumn damage from cabbage stem flea beetle. This declined to around 40% with late August sowings and only just over 10% for those in the first week of September.

"Rapid, minimum-disturbance OSR-drilling immediately after combining can take advantage of surprisingly high levels of soil moisture beneath most cereal canopies," he adds.

"Earlier-sown crops also benefit from substantially more thermal time to get established ahead of winter than those sown later. It can mean an additional 4-5 leaves/plant ahead of winter, as well as significantly increased rooting. This means plants are better placed to tolerate winter water-logging and pigeon grazing as well as any CSFB larval challenges.

"Higher early spring GAIs may also significantly reduce the amount of nitrogen fertiliser required for the most productive canopies. What's more, earlier-drilled crops are generally at less risk from phoma and subsequent stem cankering, so have higher infection thresholds for spraying.

"Early sowing should all but eliminate the need for autumn insecticide spraying, helping to support the most active populations of key beneficials valuable in natural CSFB control," he concludes. ■

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