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Grassweeds

What's in the stack?

A stack is no longer viewed as simply which active ingredients are in a programme, it includes cultural control methods too. *CPM* shares thoughts from grassweed experts.

By Rob Jones

Choosing herbicides for the autumn programme is an important decision, but it's also worth considering how cultural tactics and chemistry stack together to provide improved control. With challenging grassweed populations, this year will undoubtedly be about looking at all options in hope of gaining an advantage.

Bayer's Matt Siggs says good cultural control sets the stage for pre-emergence programmes by reducing the number of weeds germinating in the crop. "Fewer weeds mean that each plant is exposed to the optimum dose of active so there's less pressure on the pre-em layer of herbicides. That helps to deliver a manageable low weed population for any post-ems," he says.

Stale seedbeds, delayed drilling date and optimised seed rates are three key cultural tools available to stack together at autumn planting. "Last season, the hot, dry summer meant some farmers were rightly trying to conserve soil moisture, and so didn't undertake light cultivations to create a stale seedbed.

"The knock-on impact of not using glyphosate before drilling because there were no weeds in the field meant that when we had rain, the weed seedbank woke up in one flush which put a lot of pressure on pre-em herbicides," explains Matt.

"However, a lack of moisture doesn't look like it'll be a problem this time around, so focus on getting a good chit ahead of spraying off."

Stimulating germination

Ideally, there should be a higher level of soil disturbance in the top few cms when creating the stale seedbed compared with the final drilling pass, he says. This helps to stimulate weed germination and reduce the levels that emerge at the same time as the crop.

Delaying drilling date to mid-October is another proven tactic to improve blackgrass control, and to a slightly lesser extent, ryegrass. However, Matt believes autumn 2019 still looms large in some farmers' minds with the fear of large areas going undrilled.

"The main blackgrass and ryegrass flush tends to be in late September into early October, so for every week after the 1 October that you drill, you're reducing the weed population pressure in the crop.

"But on farm, it's about balancing the risk versus reward. Where weed pressure is stubbornly high, the best options are to delay drilling or plant an overwinter cover crop and a subsequent spring crop. In medium or low-pressure fields there's more flexibility as long as other control tools can bring down populations to manageable levels," he says.

A recent trial in partnership with NIAB has been investigating the benefits of stacking together drilling date, seed rate and mode of action diversity on overall weed control. Although the results weren't unexpected, they emphasise the benefit of stacking controls together to reduce weed populations to manageable numbers.

"The results show that higher seed rates have a small benefit, whereas delayed drilling has a greater effect on populations. If you don't delay, it's difficult to reach the same level of control using herbicides," explains Matt.

"This is especially the case in the West and the North where it's not always feasible to drill late meaning rotational planning for ▸

Good cultural control sets the stage for pre-emergence programmes by reducing the number of weeds germinating in the crop, says Matt Siggs.

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John Cussans has been undertaking trials to investigate the benefit of diversifying herbicide programmes in isolation – separating out this effect from that of a higher total herbicide 'load'.

▸ spring crops, ploughing and so on, is the way to go."

Matt points out that there are secondary benefits to drilling later in wetter, cooler conditions — for one, soil-mobile herbicides like flufenacet thrive in moist soils. Secondly, all active ingredients degrade more slowly in cooler weather with less sunshine, protecting the herbicides and prolonging their efficacy for longer.

The same NIAB trials also looked at herbicide stacks, specifically the benefit of using diverse modes of action (MoAs) compared with simply increasing the load of one active.

NIAB's John Cussans says in many trials, the effect of diversifying MoAs is confounded by the effect of simply adding more herbicide in total. "Since as you stack more herbicides, you're simultaneously increasing the diversity and the total load," he explains.

"This makes sense, since using products at full rate, which is how farmers use them, is what we generally recommend for both efficacy and resistance management. But such trials don't really tell you if you get better control because you have diverse MoAs, or the effect from just applying more herbicide in total.

"We wanted to investigate the benefit of diversifying herbicide programmes in isolation – separating out this effect from that of a higher total herbicide 'load'."

Diversity

Following two years of trials, results suggest that using more MoAs has a benefit over and above just increasing the total herbicide loading in the programme. Although results are more pronounced for ryegrass than blackgrass, using more MoAs is sensible for overall weed control and long-term stewardship.

Fortunately, says Matt, there are lots of options available to diversify actives in the programme this autumn. "In most situations, the base is Liberator (flufenacet+ diflufenican) plus Proclus (aclonifen), but how you build on that depends on the situation.

"In barley that's probably enough. Whereas in wheat, look at what you're trying to control, it's rarely just one weed, there's usually a mixture. In high pressure blackgrass and ryegrass situations, we achieve good results from adding prosulfocarb to the base programme.

"Aclonifen has an 80-day half-life so offers extended protection, but if you're expecting later germinating brome in the mix, using tri-allate (Avadex) and topping up with other residual chemistry to extend protection may be a better option than prosulfocarb," says Matt.

Another option this season is metribuzin+ flufenacet+ diflufenican (Octavian Met), following a label change permitting the full 1 l/ha rate. This delivers three MoAs and can be easily stacked to deliver a robust programme. According to Matt, one strength is that it seems less affected by delayed application, offering good control at pre- and early post-em, compared with Liberator.

"Guidance for Liberator plus Proclus is to always apply at the true pre-em timing for better control and crop safety. With the metribuzin products there's more leeway, but I'd still plan to apply soon after drilling.

"Irrespective of herbicide, aim for a

consistent drilling depth around 3-3.5cm with a fine, consolidated seedbed to promote pre-em performance."

Another reason to optimise weed control is overcoming cereal volunteers, which can act as a green bridge for aphid vectors of barley yellow dwarf virus (BYDV). When spraying off stale seedbeds it's worth considering optimum time for aphid control, comments Matt. "Bayer trials show a nine-day gap between spraying off with Roundup (glyphosate) and drilling resulted in higher yields due to reduced infection, compared with a two-day gap.

"Try to avoid a tight turnaround between spraying-off and drilling if BYDV is a problem. With a short gap, aphids can survive on the dying volunteers and weeds, and then directly migrate to the newly emerged crop," he says.

"Also, don't assume 540g/ha of glyphosate is the correct dose. We've had good growing conditions before, during and after harvest this year. As a result, we're seeing fairly vigorous and large weeds and volunteers which will require more robust rates than assumed," stresses Matt. ▸

A long-term contribution

Farmer and contractor, Tim Galloway, has kept on top of grassweeds this year thanks to a proactive approach and robust autumn herbicides. Tim runs Galloway Farms near Epping in Essex in partnership with his brother Alistair. Their 730ha includes winter wheat, barley, oilseed rape, spring beans and oats.

The farm also runs a successful contracting business and is one of the longest-running Avadex (tri-allate) spreading contractors in the country, having serviced local customers for more than 35 years.

They use a low-ground pressure Techneat spreader mounted behind a UTV equipped with Topcon RTK guidance. Tim believes this is the best way to apply the product.

"Some customers come and go with Avadex, whereas others use it every year — we've applied it for one farmer for 35 years," says Tim. "In 2021, we treated more than 3200ha, which is the most we've ever done in one season."

However, Tim says they applied less last season, which he believes is partly because some farmers will have hoped newer chemistry like Luxinum Plus/Luximo (cinmethylin) would do the job.

"Luximo is a good product, but I expect more people to use it with Avadex this season. That's because as a grower, Avadex is a staple in our pre-emergence programmes. We'll use it on all of our winter cereals and this year you can see the benefit wherever we've had a slight miss.

"The most important thing is to ensure the application is spot on; timing is crucial," he stresses. "We've seen all conditions in our 35 years of contract spreading but you achieve maximum efficacy from the product when the crop is drilled, rolled, and pre-ems are applied in quick succession, just before rain. This moves the chemical to a place in the soil where it can act on the grassweeds," concludes Tim.

Galloway Farms has been contract spreading Avadex for more than 35 years.

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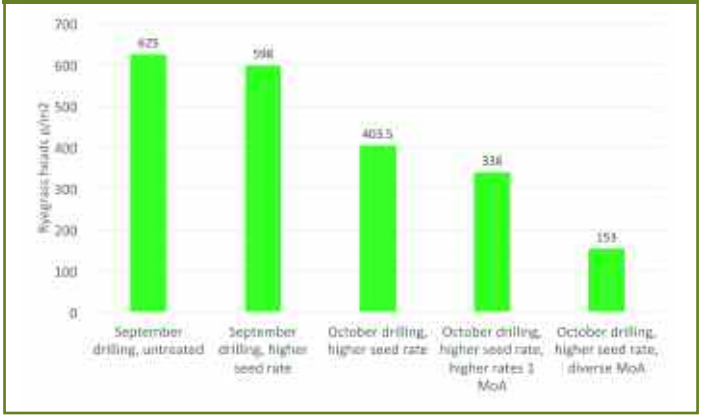


Liberator v metribuzin co-form application timing

▸ Back to cultural control methods, John believes more focus should be given to the role of the crop canopy in suppressing surviving weeds. "The crop is finishing the pre-emergence herbicides' work to translate good plant control into good head control.

"I'd encourage farmers to look at anything that'll improve the crop's outcome such as drainage or resolving soil compaction. Those sorts of things are good general practice but should also be considered weed control," he says.

According to John, part of the problem is price. "We've gone from an era where you could easily pull a herbicide programme together by starting with a flufenacet-based herbicide and adding products like Avadex, depending on the risk.

"Now there are many ways to skin a cat, but not many farmers can use all of the available chemistry at once to deal with grassweeds, partly because of crop safety, but mainly because of the cost.

"We've seen improvements in efficacy with the new chemistry, but it doesn't remove the role of existing products," concludes John. ■

Testing clethodim to the max

Research indicates that clethodim is bucking the trend of other contact-acting grassweed herbicides by continuing to offer effective control. Billed as active on strains of blackgrass resistant to other ACCase herbicides, clethodim (Centurion Max), is registered for use in oilseed rape and sugar beet.

Research conducted by Dr Stephen Moss has analysed the active's efficacy against a range of blackgrass and ryegrass populations, compared with a control of cycloxydim, which is known to be more affected by resistance.

For Italian ryegrass, results showed that most samples were relatively well controlled by clethodim, with just four showing a reduction in seedling growth of less than 90%.

When cycloxydim was sprayed on these survivors, they were all found to be highly resistant to cycloxydim. In contrast, they showed only partial resistance to clethodim with the herbicide still giving 60% control even on the least susceptible sample.

It was a similar story with blackgrass — none of the samples showed complete resistance, although some showed partial resistance compared with the two reference samples which were totally susceptible to clethodim.

"The main mutation affecting 'fops' and 'dims' in blackgrass is 1781," says Stephen. "Having this mutation makes weeds highly resistant to most herbicides in this group of chemistry, but clethodim is an honourable exception to the rule.

"There is some resistance but it tends to be marginal. Global studies have shown that the main mutation impacting clethodim's field performance is 2078. This is uncommon in UK blackgrass but more common in ryegrass. Despite this, control of ryegrass with the 2078 mutation was still surprisingly good in a reference population with this mutation."

The research conducted by Stephen shows that when the spray conditions are good, clethodim application consistently reduces the blackgrass population to a greater or lesser extent. "Even with the more challenging grassweed populations, you can still achieve good control in the field if you follow the stewardship guidelines," says UPL's Stuart Jackson.

This includes the use of an acidifying water conditioner which increases the activity of clethodim regardless of water hardness, comments Stephen. Across the six field trials where this was investigated, a water conditioner increased blackgrass control by 11% on average.

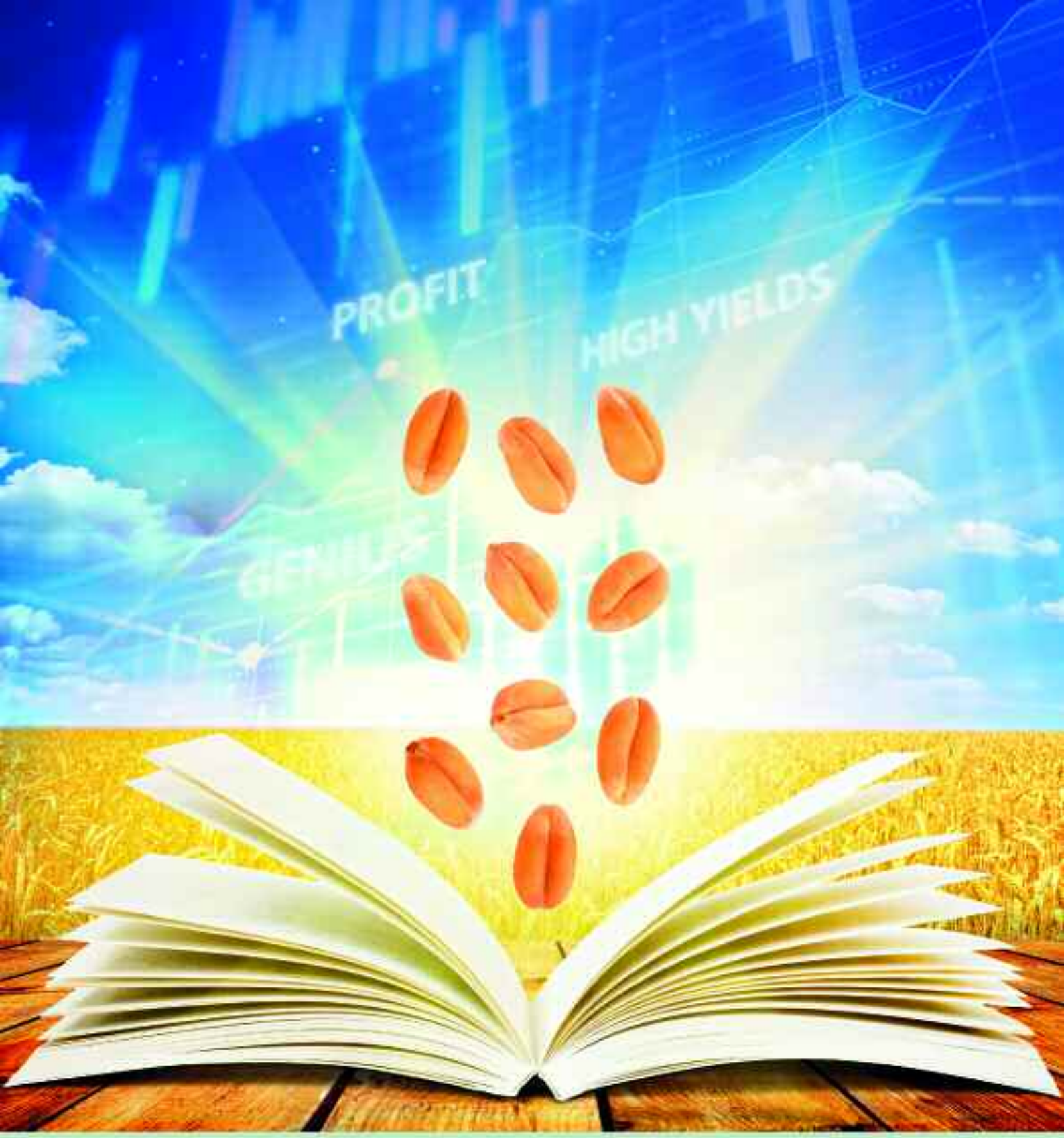
Stuart stresses that for OSR, application timing is critical. UPL recommends that Centurion Max isn't applied after 15 October, or when the crop is beyond six true leaves. "This is primarily a crop safety measure because the plant must be growing to metabolise the clethodim and avoid damage from the herbicide.

"However, farmers will also struggle to hit the weeds due to shading if the crop canopy is any bigger, although this may depend on the row spacing and seed rate," he says. "The ideal timing to spray blackgrass with Centurion Max is when it's at three true leaves and hasn't tillered," explains Stuart.

Another important timing factor is the sequence with other herbicides, which according to the stewardship, should include a ten-day interval between applying any pesticide and Centurion Max. Then, there's a fourteen-day window after Centurion Max has been used where no other pesticide should be applied.

Looking ahead ten years, Stephen predicts that clethodim will still play a part in grassweed control. "It's dangerous to predict the future, but I expect it to still be useful on most farms. It's been used for decades in Australia and is still an important part of resistant ryegrass control strategies there," he concludes.

Stephen Moss predicts that clethodim will still play a part in grassweed control, even in 10 years' time.



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