

Taking a renewed look at CTU

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HOLLY PRATT

Despite being a stalwart in the weed control toolbox, chlorotoluron has arguably found itself relegated to the shadows following a series of big herbicide launches. *CPM* takes a look at the value it can offer current day programmes.

By Janine Adamson and Rob Jones

With a range of new, highly effective residual herbicide actives being launched during the past few years, it’s understandable why focus may have wandered from chlorotoluron (CTU).

And while it’s unlikely to ever compete on like-for-like performance, what it does do, according to experts, is bolster overall control while offering added benefits such as aiding resistance management.

For context, CTU’s journey hasn’t been straightforward. Following withdrawal from EU registration in 2010, it was successfully re-registered in 2014 but at a lower dose rate, as part of a three-way co-form. Adama’s Holly Pratt believes this could be why it’s fallen out of favour.

“It was very efficacious at the higher rate, and while it’s now

used at a lower loading, it’s still a valuable product to have in the weed control toolbox,” she says.

Available as two three-way products – Tower/Tribal (chlorotoluron+ pendimethalin+ diflufenican) and Chrome (chlorotoluron+ flufenacet+ diflufenican) – it’s intended use is to combat annual meadowgrass and a range of broadleaf weeds such as groundsel, chickweed and mayweed.

Weed expert, ADAS’ John Cussans, says it’s the flexibility of the product labels which adds most value. “You can use the products at the same rate across winter and spring crops, at both pre- and post-emergence timings.

“While other chemistry may remain in the shed not being used, growers are likely to always find an appropriate and timely opportunity to apply Tower

or Chrome during the season.”

He agrees that even at the lower rate, CTU remains effective. “It’s a useful active in meadowgrass especially. Plus when combined with two other actives in a co-form – whether that’s pendimethalin/ diflufenican or flufenacet/diflufenican – it’s targeting a wide spectrum of



Partner product

For pernicious grassweeds like blackgrass and ryegrass, Adama’s Holly Pratt says chlorotoluron is an effective partner product for hard-hitting chemistry such as cinmethylin and aclonifen.

► weeds, there's a lot in there."

A weed increasing in prevalence due to changes in tillage approaches is brome. Holly points out that by adding Tower into post-em tank mixes, this could reduce pressure across all brome species.

"Because it contains CTU, Tower adds persistency to a programme which is useful when a pre-em application may start to run out of steam. With brome having protracted emergence throughout the season, a level of product longevity is important in those situations," she explains.

An example tank mix could be Tower plus prosulfocarb, adds Holly. "For the best results, it's always wise to target the weed at early emergence, before it starts to tiller."

According to John, the rise in popularity of no-till means that weed spectrums are changing overall, not just encouraging brome, but favouring species such as groundsel and poppy too. As such, glasshouse work conducted by ADAS has been looking at the performance of Tower against varying groundsel populations, compared with ALS-inhibiting chemistry such as metsulfuron, pyroxulam and florasulam.

"Although further work is required to understand this fully, initial results indicate that Tower maintains control of groundsel, despite variation across the other actives screened," says John.

ProCam agronomist for the North,

Alistair Gordon, has used Tower for around eight years to primarily target annual meadowgrass. He says compared with straight flufenacet, the added broadleaf weed activity is what makes the product a solid all-rounder, thus proving popular in his region.

"In Scotland, with rotations shifting to include more cover crops and fallow areas, we're also finding an increase in groundsel, which seeds quickly in the spring. This proves a significant problem in subsequent cereal crops.

"And because no pre-em herbicide gives full broadleaf weed control, and SU (sulfonylurea) chemistry is beginning to indicate resistance issues, we require alternative modes of action, as in products like Tower. We simply can't rely on SUs alone to eradicate broadleaf weeds," he stresses.

As for pernicious grassweeds like blackgrass and ryegrass, Holly says CTU is an effective partner product for hard-hitting chemistry such as cinmethylin and aclonifen. "It bolsters those actives and powers them up. In being a different mode of action, CTU is also helping to safeguard the newer chemistry in terms of resistance management."

John agrees: "Supporting other herbicides and reducing the pressure on them is a critical part of product stewardship.

"If you take the whole weed control window and the opportunities presented for control, you can



Delivering synergy

According to ProCam's Alistair Gordon, when the three actives are presented in one formulation, it appears to deliver synergistic results in meadowgrass.

certainly introduce Tower or Chrome and see a potential benefit, particularly during difficult conditions such as cooler temperatures."

To conclude, Alistair reveals that where he's advised the use of Tower on-farm, he's observed a positive outcome from it being a three-way co-form. "When the three actives are presented in one formulation, it appears to deliver synergistic results in meadowgrass, compared what would be the sum of the solo actives. It's efficiency in a can." ●

UK glyphosate resistance update

Further suspected cases identified and under investigation

Earlier this year, the Weed Resistance Action Group (WRAG) announced the first confirmed case of glyphosate resistance in Italian ryegrass from Kent, with two further cases later confirmed in Gloucestershire and north Yorkshire. A fourth population in Essex also showed decreased glyphosate sensitivity in the tests.

Due to the importance of these incidences, Bayer funded ADAS to investigate further suspected cases, typically where plants had survived an earlier application of glyphosate. This led to 10 cases, representing eight farms, being examined in spring 2025.

In a note issued by WRAG in late

August, it states that following glasshouse plant-based screening, it's become apparent that there's a high risk of resistance on three of these farms. Seed from these new populations will now be tested to fully confirm if they should be classified as resistant; this is in addition to the three cases previously confirmed.

The note adds that with good background on all of the cases investigated, there are common principles:

● All the three cases identified as resistant and four high risk of being so, are from high risk crop management situations (no cultivation and/or very little soil disturbance,

larger weeds allowed to grow without earlier control when small, such as can happen before spring crops)

● It's likely that all cases have evolved from independent selections; there's no geographical pattern related to their incidence

To continue monitoring the situation, Bayer has agreed to fund ADAS to conduct a further year of focused testing in spring 2026. As in 2025, this will target populations of Italian ryegrass-surviving glyphosate application, prior to drilling a spring crop as this has been identified as high risk situation.

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Cut weed populations before turning to herbicides

With cereal drilling poised to kick off, there are still opportunities to control weeds out of the crop before turning to the performance of residual herbicides, remind experts

Following an earlier than usual harvest, Bayer technical manager, Aleks Ćurčić, expects relatively early cereal drilling this season, with farmers keen to get on with fieldwork and put last season behind them.

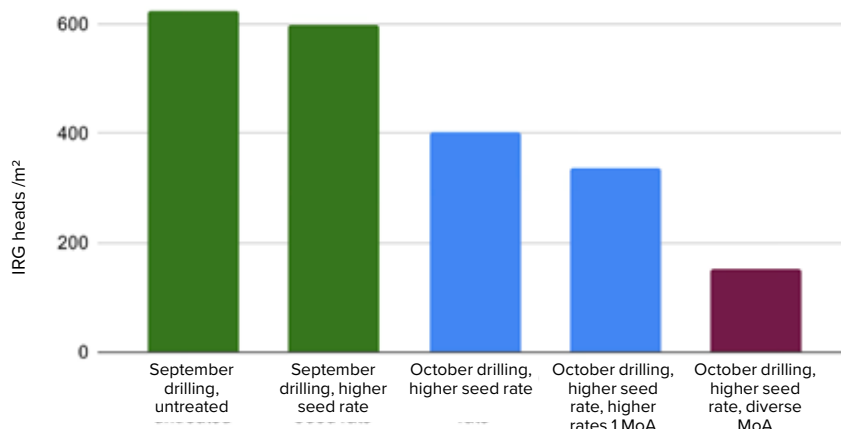
However, with blackgrass, Italian ryegrass and brome persistent problems on many farms, Aleks urges farmers to go in with their eyes open if they're planning to drill early. She says weed pressure, septoria and BYDV all benefit from a delay into October.

"Varietal resistance and a robust spray programme can help to manage the risk from aphids and disease, but weeds require cultural controls ahead of drilling to reduce the population.

"Consequently, make sure you achieve at least one good stale seedbed; ideally, you want a month between cultivation and spray off to ensure good germination, but it depends when there's sufficient moisture to cultivate, and, the target drilling date. Aim to spray off with Roundup (glyphosate) within seven days of drilling."

Aleks points out that if BYDV is an issue, be aware of aphids surviving in cereal volunteers and catch

Stacking controls for Italian ryegrass control



Source: Niab Faversham (Kent) trial site 2023

crops. In these situations, a gap of 10 days between spray off and drilling removes the green bridge, so aphids either die or move on.

"Autumn is about balancing different priorities and understanding conditions on farm, from cultivation to drilling and subsequent herbicide applications," she says.

CHALLENGE CONTINUES

Niab regional agronomist, Keith Truett, who advises farmers in Kent, Sussex and Essex, believes that in reality, grassweeds aren't getting any easier to control.

"In my experience, Italian ryegrass is the nastiest. Although blackgrass is manageable by using spring crops, ryegrass germinates more readily all through the year. Even a low plant count can tiller extensively and create a high weed return. As a result, residual control has to last from drilling until March."

On one farm near Faversham, Keith has worked closely with the farm manager to control a serious ryegrass infestation. Eight years ago, they recognised they weren't achieving sufficient control with residual herbicides due to resistance.

He says the most important step in starting to rectify the problem was using a rotational fallow, then everything that grew was cut before maturity and taken off-farm for silage, which helped to reduce populations to a manageable level.

"For grassweed control, it's cultural first because chemistry won't do the job on its own," stresses Keith.

In terms of programme approach, the farm uses a pre-em comprising Proclus (aclonifen) plus Liberator (flufenacet+ diflufenican). Usually this



Getting ahead

Bayer's Aleks Ćurčić urges farmers to go in with their eyes open if they're planning to drill early.

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To control brome in wheat, **Emma Jones, Bayer Technical Manager**, recommends a robust pre-em. Use stale seedbeds and delayed drilling to reduce population size but all brome species will be a threat to cereals in the crucial window just after drilling. Metribuzin co-forms like Alternator® Met, Octavian® Met or Cadou® Met provide effective control with the option to add Proclus® to tackle the most difficult populations. Be aware that rye, meadow and soft brome tend to germinate in spring too so be prepared to come back later in spring for these weeds.



Find out more



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AGRONOMY Weed control

is followed by a second application based on cinmethylin one month later, rather than the 1–2 weeks later that's common in blackgrass programmes, he explains.

This is to control germination throughout autumn. "On the other hand, blackgrass tends to mainly germinate in the first three weeks of October, so the aim is to have high levels of residual herbicide on at this time," explains Keith.

For especially difficult Italian ryegrass, he has the option of a third application which would usually be a chlortoluron-containing product, plus prosulfocarb. He says he prefers using prosulfocarb later

in the season when it's cooler to reduce losses due to its volatility.

"You can't take a ryegrass problem too seriously, stamp it out as soon as you have it. You require attention to detail in everything, which includes preventing movement of resistant seed on machinery. On the farms I'm advising, the resistance has been to in-crop herbicides, but we're all aware of the announcement of a case of glyphosate resistance in Italian ryegrass too."

And while resistance testing is a useful tool, Keith suggests growers shouldn't be surprised if results come back inconsistent. "There's variation in resistance status even in



A persistent problem

Niab regional agronomist, Keith Truett, believes that in reality, grassweeds aren't getting any easier to control.

the same field, so diversity in the chemistry is important and fierce cultural approaches. You can't keep escalating herbicide spend, you have to be serious about cultural control."

He adds that ploughing is a good option to reset grassweed numbers if the soil type and condition allow effective inversion. "Ploughing very dry soils, and some silty or sandy soils can result in soil moving sideways but not burying seed from the soil surface. Don't plough the same field too often, keep seed buried for at least five years, ideally more."

FLEXIBLE CULTIVATIONS

Equally, Keith cautions against a prescriptive no-till system which rules out ploughing completely. Instead, a flexible approach to cultivation and tillage is necessary, he suggests. "Added to that, there is plenty of evidence that ploughing occasionally doesn't reverse the benefits to soil condition and biology from several years' no-till.

"For any residual programme, don't lose sight of the fact that herbicides can affect crops, and open crops lead to more tillering and more seed return from weeds – there's a balance in what you're trying to achieve."



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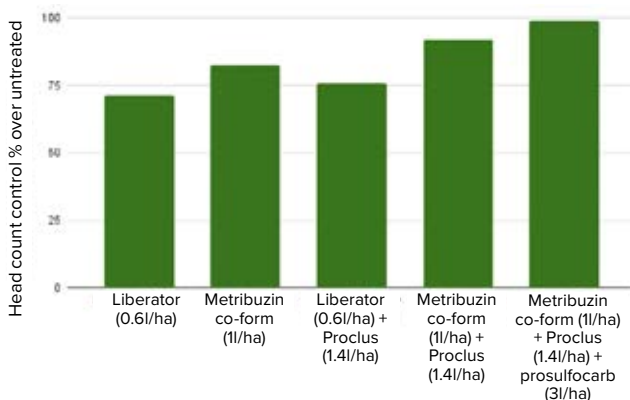
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Italian ryegrass control using a diverse programme



Source: Bayer contracted trials x3 (2022-23) Pre-em applied autumn 2022. Average untreated count = 110m²

Considering conditions all round and fine-tuning herbicide programmes accordingly are critical aspects full stop, adds Aleks. “If you’re going early, you have to plan for at least two sprays in the programme against blackgrass and ryegrass. Persistency is key – higher soil temperatures at early drilling dates mean residual herbicides break down more quickly.”

She highlights that the first spray should go on at ‘true’ pre-em timing. “For the follow up, a little flexibility is helpful to ensure there’s protection when weeds chit. Factor in rainfall which promotes germination, into the spray decision.”

Furthermore, soil-mobile actives like flufenacet and metribuzin have a relatively short half-life so should be used with longer-lasting chemistry, points out Aleks. She recommends starting with Proclus plus a metribuzin co-form like Alternator Met, Cadou Met or Octavian Met (all flufenacet+ diflufenican+ metribuzin), which are particularly useful where broadleaf weeds are a problem too.

“Because it has a half-life of 2-3 months, using Proclus means you have

the reassurance that there’s some protection if the second application is delayed. For the follow up timing, use different modes of action; diversity helps with weed control and is a good resistance management strategy.”

Trials at Niab’s Faversham site have demonstrated the importance of this in residual programmes especially, although the benefit is more pronounced in ryegrass than blackgrass. In addition to chemical controls, the trial suggests cultural controls also stack together to increase efficacy (see charts).

In the experiment, the starting point was an untreated September-drilled crop. Next, higher seed rates were tested and October drilling; the latter which had a significant impact on overall control.

In addition to cultural controls, a single active programme was compared with one utilising diverse modes of action. The different programmes had the same total loading of herbicide to pull out the effect of mode of action diversity. The results indicate the uplift in weed control from utilising a spectrum of active ingredients.