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Battling brome

Brome is proving an increasingly difficult weed to control with populations of all species reportedly on the rise. CPM brings together stakeholders from across the industry to discuss, as part of this month’s Real Results Roundtable.

By Janine Adamson

With last season coined ‘the year of the grassweed’, plus the added pressure of continued inclement weather conditions all spring, where does this leave growers as they begin to plan their autumn herbicide strategies?

For this Roundtable, CPM brings together NIAB’s weed biology and management specialist, John Cussans; BASF’s cereal herbicide business development manager, Stuart Kevis; BASF’s agronomy manager, Jennifer Deakin; and Colin Woodward, agronomist at the Great Tew Estate in Chipping Norton.

Colin oversees around 1350ha at the estate involving a rotation of winter wheat, winter and spring barley, oilseed rape, winter and spring beans, spring peas

and spring oats. This is across three main soil types – Cotswold brash, clay and Ironstone loam.

Great Tew has countryside stewardship and SFI agreements in place to protect and enhance the environment – all arable fields have 6m margins and more trees and hedgerows are being planted. Organic matter is added to the soil with compost, biosolids, cattle muck and through cover cropping.

The discussion for this Real Results Roundtable is understanding the nuances of brome control.

Current state of play

John opened up discussions by explaining that similar to wild oats, brome is often in a state of flux – in some years pressure seems to skyrocket, whereas in others, the weed almost disappears. “Last harvest was one of those years where brome was everywhere with all of the different species at very high abundance.

“That said, there’s definitely an underlying trend towards more brome thanks to changes in management techniques such as a reduction in ploughing alongside perhaps shifts in herbicide use driven by other concerns. It’s a group of species which undoubtedly requires a renewed focus and from my perspective, that includes revisiting the weed biology information which we may have taken for granted,” he said.

He then reminded of the importance of understanding the two groups – anisantha (sterile and great brome) and serrafaculus

(meadow, soft and rye brome) – and how their behaviour, and therefore control methods, differ.

“The anisantha-type brome are autumn germinating weeds so we can draw parallels with blackgrass, where most will emerge with a crop so have the potential to be very competitive. In fact plant-for-plant, sterile brome is slightly more competitive than blackgrass.

“Whereas for soft, meadow and rye brome, these individuals come up from when you drill the crop in winter right through to the spring. Although the weeds which emerge in spring are less competitive, they do keep the population ticking over.”

John pointed out that for scenarios where ALS resistance is developing, NIAB has been focused on how to control spring



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For meadow and rye brome control, Stuart Kevis believes there should be a zero tolerance approach whether that's through spraying off patches, hand-roguing or mechanical weeding.

▶ germinating brome due to the lack of effective contact-acting herbicides. “For a weed which germinates partly in winter and partly in spring, you just can’t target it sufficiently with the herbicides which we currently have,” he said.

Colin agreed that this is a specific problem at the Great Tew Estate. “Meadow and rye brome generally germinate for us in November through to February, and because we can only apply Avadex (tri-allylate) at pre-em, that runs out of steam by the time the brome are germinating. We only tend to see sterile brome where we’re direct drilling,” he explained.

In terms of this season specifically, Colin raised the potential implications of SFI. Whereas some actions such as legume

fallow (NUM3) and herbal leys may help contribute to successful brome control, others such as enhanced over-winter stubble may hinder.

In response, John said it’ll be a case of finding the sweet spot to ensure actions are delivered correctly, without adversely having an impact on weed management. “Afterall, set aside led to a proliferation of weeds,” he commented.

Seedbed management

Conventionally, advice has been to cultivate as soon as possible after harvest for sterile and great brome because shallow burial promotes germination, explained John. For soft, meadow and rye brome, seed should be left on the soil surface to encourage germination and prevent dormancy.

However, he questioned this school of thought. “Preliminary data from NIAB’s brome survey, which was carried out last summer, begins to bring into question whether that should be a hard and fast rule for every population every season.

“I think we should probably move to a situation where we advise people to respond to conditions post-harvest – if they’re conducive to getting grassweed seeds to germinate, you do a bit of work to increase soil-seed contact whether that’s shallow cultivation or even a roll. If it’s dry or dusty, you leave the seed on the soil surface because anything you do will actually protect them from those conditions.

“I think there’s a lot more work to be done here because we’re finding different populations respond differently, and we

don’t quite understand how that interacts with the season-to-season difference in weather patterns,” he explained.

ALS resistance

Perhaps concerningly, John shared that ALS-resistant strains of rye and meadow brome are being regularly reported, which was shown during NIAB’s resistance testing last year. “We’re certainly seeing an uptick in the occurrence of ALS resistance in all brome species, and where we’re seeing new cases, they’re often clustered together.”

John explained that the reason for this could be biology-related. “Meadow and rye brome mature relatively late and are more synchronised with the crop. They’re quite aggressive at keeping their seeds even through harvest which makes for a bio-security issue – incidental movement of farm machinery – so we’re physically moving seed around the local area.

“It’s hard to target something if you think it’s ALS-resistant, so the message about this group of brome species is you have to be vigilant about new populations and ramp up bio-security measures,” he stressed.

Stuart concurred: “In many ways, for meadow and rye brome, there should be a zero tolerance approach whether that’s through spraying off patches, hand-roguing or mechanical weeding. That’s because in terms of chemistry, there’s nothing which can fully do the job,” he said.

Cultural methods

Colin suggested he was interested in the concept of harvest weed seed control (HWSC) such as the Redekop Seed Control Unit (SCU). John said this was something which NIAB had been investigating as part of work with BOFIN (British On-Farm Innovation Network).

“When you look at the different weed species, really how effective seed mills are is related to seed retention,” he continued.

“But what we found is that we can achieve 70% reduction in the following crop in brome, whereas it was barely 5% in a weed like blackgrass. It’s obviously related to seed biology.”

This reminded Colin of something he has witnessed at Great Tew. “I’ve noticed the space between the grass margins and the crop – brome love it there. Of course then, the combine naturally picks the weeds up and then disperses them so brome can creep further into the field. That’s another watch-out from SFI – cleanliness between margins and the crop,” said Colin.



According to NIAB, ALS resistance is being observed across all brome species.



The BSBI monitoring scheme indicates the plant species which has increased the most across the British Isles is rye brome.



Having used Luximo for two years, Colin is impressed with its performance so far.

John then highlighted the importance of wider cultural control methods such as optimising cropping rotations and the role of resistance testing. “Knowing where you sit is quite important,” he advised.

Chemical control

As earlier discussed, Colin currently uses Avadex as part of his brome control strategy, while also using prosulfocarb (as in Defy), and then ethofumesate (as in Xerton) at post-em.

But an alternative option, as highlighted by Jenny, is Luximo (cinmethylin). “In a more conventional drilling scenario where you might be going late to target blackgrass, you will see a good level of activity from Luximo on sterile and great brome,” she said.

Stuart added that although the active

was launched primarily to control blackgrass and ryegrass, BASF has re-evaluated this in acknowledgement of the threat of brome. “Data suggests Luximo can perform as good as a flufenacet-based programme at pre-em for sterile brome control.

“We have a reasonable number of data points to confirm this is the case for autumn germinating brome species which appear early,” he added.

Furthermore, Stuart says brome is becoming a greater focus when screening new active ingredients to bring to the market. “But as with all of these options, stacking or mixing in sequence, including Luximo, should prove a solid approach.”

Colin recalled the days when Atlantis (mesosulfuron+ iodoflufenacet) provided good control of brome as part of blackgrass programmes. “Of course now it’s no longer that effective on blackgrass, so we use contact herbicides to target the brome, ryegrass and wild oats,” he said.

Having now used Luximo for two years, Colin is impressed with its performance so far. “It’s a step-up from flufenacet in terms of tackling blackgrass, in fact, it’s my go-to pre-em. You just have to show it some respect because it’s a powerful tool.

“But hearing that it also has some action against brome is certainly reassuring,” he pointed out. Colin then raised the fact Luximo can be used post-em too. “If the conditions are difficult for the weeds to germinate at pre-em, whether that’s due to stone content or in an open seedbed, you do have that option.”

A broader issue

Brome abundance isn’t just rising in agriculture, suggested John. “There’s definitely something happening beyond farming. If you look at the BSBI monitoring scheme, which is a survey conducted by botanists across the British Isles, one of the species which has increased the most is rye brome. There’s also been a substantial increase in great brome too.

“So it seems uncropped land is becoming a reservoir for brome. Ultimately, there’s been a shift – a combination of changing climate, the way we’re farming and how we’re managing non-cropped land,” he said.

Colin agreed that during the past 25-30 years that he’s been farming, he’s never seen such high levels of rye brome before.

Whereas for Stuart, he’s keen to simply raise the profile of brome. “It’s a complex problem and certainly one which growers are seeing far more of,” he concluded. ■

Real Results Roundtable

BASF’s Real Results Circle is a UK-wide agricultural network now in its eighth year. The initiative is focused on bringing together growers, industry experts and BASF to create a more resilient farming system that’s sustainable for farm business profit, for the people we feed and for the planet we live on.

Real Results Roundtable is a new initiative which explores related topics, such as resilient disease control, environmental stewardship and return on investment. Roundtables centre around Real Results Circle farmers and associated experts from the wider industry.

By coming together to openly discuss and therefore face challenges as one, we can find out what really works and help to shape the future of UK agriculture.

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