A piece of the puzzle

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Technical
Blackgrass survey

Though some growers may have won the battle, there's still a war waging against blackgrass for many. *CPM* looks at some of the main challenges and addresses how IPM should be an important part of the game plan in a recent survey with BASF.

By Charlotte Cunningham

Blackgrass continues to cause headaches for crop production, even though growers have made a considerable effort — and with success — to get on top of the yield-robbing weed over recent years. However, resistance is becoming a growing concern and incorporating other methods — like cultural controls — alongside chemistry has been a core part of on-farm strategies for many years now.

But with a number of different approaches, all offering a variable response, is there a "best" way to prevent resistance, while keeping on top of blackgrass burdens?

According to a recent survey carried out by *CPM* and BASF a mixture of delayed drilling, spring cropping, pre-emergence herbicides and a zero-tolerance approach has made the biggest difference to weed control strategies over recent years.

"There's an awful lot of factors to consider here, but from a chemistry point of view, the focus really has switched to soil-residual chemistry as the main backbone of grassweed control — particularly blackgrass and ryegrass," says Stuart Kevis, business development manager at BASF.

"There are high levels of resistance to ALS and ACCase chemistry, so over the past 10 years there's been a shift of focus to residuals.

"That said, there are a number of environmental factors which can affect the performance of residual chemistry too — including seedbed conditions, germination patterns of the grassweed and weather."

Therefore, the approach has to be holistic, and implementing an integrated pest management (IPM) strategy on farm is key, he adds. "It's crucial that IPM techniques are deployed to help lower grassweed burdens and take the pressure off the limited chemistry options."

Robust battle plan

Phil Jarvis, chair of the Voluntary Initiative echoes these views: "When it comes to effectively tackling blackgrass, you have to have a robust battle plan. In my view, there are probably 10 measures you can look at before reaching for a chemical solution. As Stuart says, this puts a lot less pressure on chemistry with declining efficacy as there's likely to be a lot less weeds to target, meaning what you do apply will be more effective."

Not only does IPM help allow chemistry to perform at the time of application, but it also protects its efficacy and longevity going forward, adds Stuart.

Thinking specifically about cultural controls, 82% of growers noted that they use break crops and spring cropping, while 72% practice delayed drilling. A further 61% said that they're currently using shallow, non-inversion tillage to help tackle weeds head on, while 49% noted rotational ploughing as a key cultural control method.

Stuart says there's no right or wrong when it comes to implementing cultural methods — it all comes down to the individual farm scenario. "Farmers know their land and soil better than anyone else and will be best placed to understand what will or won't work."

However, a degree of flexibility is warranted here, he adds. "I think one of the best bits of advice around grassweed management is not to get settled into the habit of doing the same thing year after year as this is where issues tend to arise.

"This might not just be from blackgrass, but actually, failure to switch up the approach could allow other weeds to creep in," he warns. "I do believe rotational ploughing has a place going forward, which bucks the trend with many growers heading towards minimum tillage, but there are on-going discussions at the moment that point towards weeds like brome and rats tail fescue thriving in min-till systems — so it's another element to consider."

Phil also points out that sticking to a rigid approach could cause issues further down the line. "It's important to regularly question whether you ought to change up cropping or maybe think about a different establishment technique," he says. "Spring cropping is often used as a method of controlling blackgrass, but this should be brought in strategically. Often spring cropping is just ▸

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Blackgrass survey

Sarah Cook says better stewardship is required when new modes of action become available.

▸ used as a fire-fighting method when winter drilling goes awry, but it can be planned to have a prominent place in the rotation."

While cultural controls have been brought in to compliment rather than replace chemistry, it's widely acknowledged that there are on-going issues with resistance within the current market offerings.

As such, Stuart believes testing for blackgrass resistance is another core part of the strategy in the battle against blackgrass — despite the survey revealing that 51% of growers have never done so.

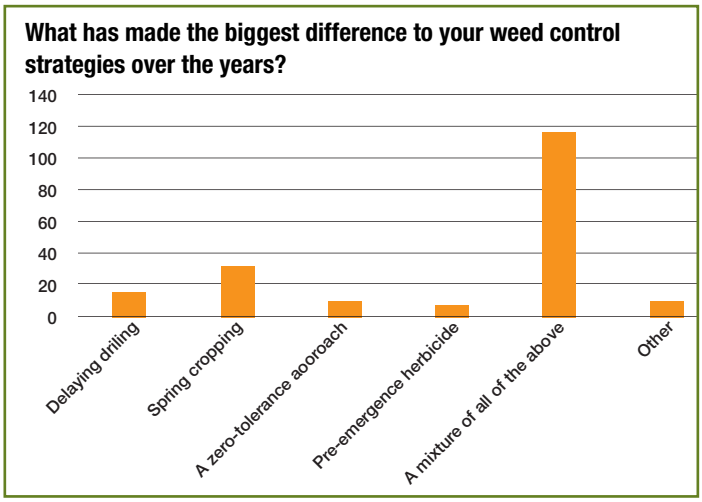
"You have to ask why people aren't testing — is it a lack of understanding about when to, or why to, test? Is it cost related?

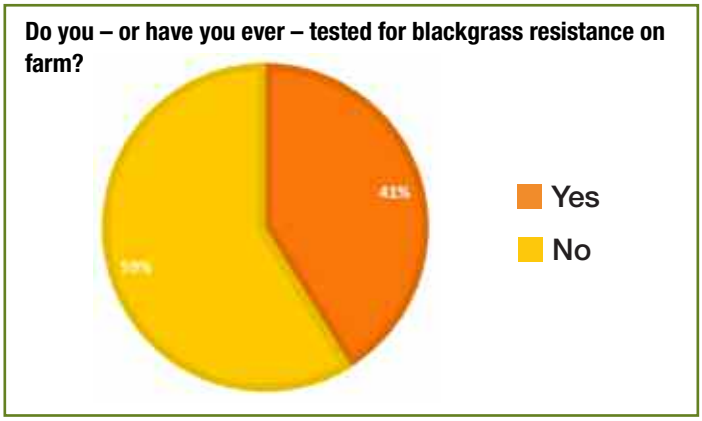
"Or are growers just assuming they have resistance?"

However, assumption can be a risky strategy, as knowing the resistance status can be a useful tool to guide product decision making, he adds. "We split products into two main categories — the target site resistance (ALS and ACCase) and then the non-target site, enhanced metabolism resistance (EMR).

"I think we know that resistance mechanisms are widespread across the UK blackgrass population — and it's fair to say that a sizeable percentage of this will be affected by both types of resistance, so having multiple herbicide resistances in a population is very common now."

That's not to say ALS or ACCase chemistry doesn't or can't work though, notes Stuart. "They can both still provide useful control for spring germinating grassweeds. We saw this a few years ago there was a shift away from Atlantis (mesosulfuron+ iodosulfuron) and then suddenly there was an outburst of wild oats and brome —





A new mode of action

Thinking ahead to herbicide usage this season and 74% of growers said they plan to use a mix of 'tried and tested' products as well as new modes of actions.

"Mixing modes of action is essential. Very few people now rely on just one active ingredient in the tank either, thankfully," notes Stuart.

And in the first new mode of action classified by the Herbicide Resistance Action Committee (HRAC) since 1985, BASF is currently focusing on bringing its new blackgrass-busting herbicide Luximo (cinmethylin) to market — which is expected to launch imminently.

Luximo is the first active ingredient in the new HRAC mode of action class "Group Q" or "30", which stands for the inhibition of the enzyme family Fatty Acid Thioesterase (FAT). These enzymes are vital for plant cell membrane development and function and their inhibition disrupts germination and therefore the emergence of grassweeds, explains Stuart.

The product has been put through its paces in various locations across the country by BASF's Real Results farmers. Among those is Northamptonshire grower, Mark Swifen, who said his Luximo trial plot last season showed no signs of blackgrass — though comparative crops treated with Liberator (flufenacet+ diflufenican) and Stomp (pendimethalin) did.

"Flufenacet is arguably the backbone of grassweed management for residual chemistry and going forward, we hope Luximo will raise that standard and become an integral part of the blackgrass control strategy," says Stuart.

How late is too late?

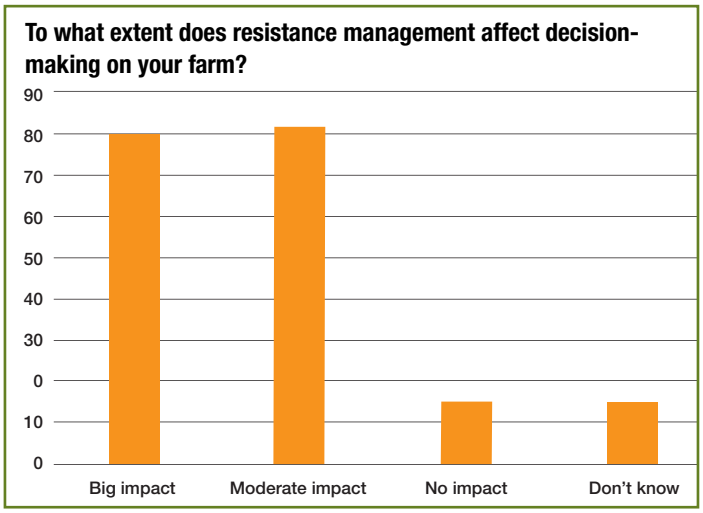
The survey identified delayed drilling as a key cultural method for controlling blackgrass. This is nothing new and is potentially one of the most widely practiced techniques. However, for profitable crop production the precise date of drilling has to be considered alongside how this could affect yield potential — so how late is too late?

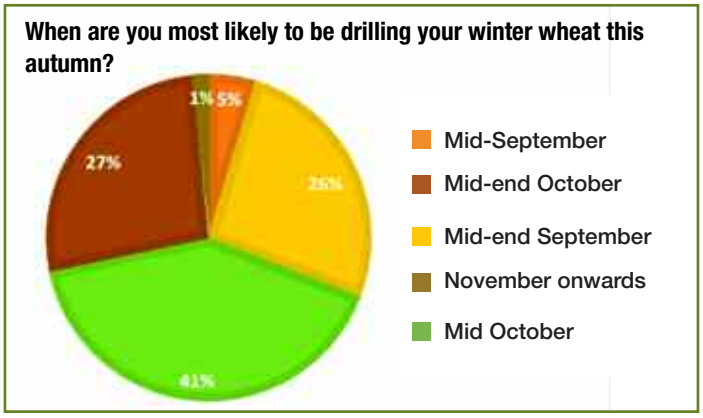
Almost half of growers (41%) said they're planning to drill winter wheat in mid-October this autumn, while 27% said they are aiming for the end of that month.

In comparison with how their planned drilling date compares with their 'usual' timing, 61% said it's the same as usual while 24% noted that they'll be going two weeks later.

"It's always a little bit of a compromise, but it'll depend largely on soil type, workload and the weather at the point of planned drilling," says Stuart. "Work that we've done alongside NIAB over the past few years has consistently proven the benefits of delayed drilling with regards to weed control — so if you can leave it later it's worth doing. In trials drilled in September compared with trials drilled in October the difference in blackgrass levels were tremendous.

"I do think there's a difference between delayed drilling and late drilling however — with late drilling tending to be crops sown from November onwards. Leaving it too late can significantly compromise yield and actually you can end up worse off from a blackgrass point of view as the plants that do germinate have more space to grow and can come very competitive with a slower establishing wheat crop," he concludes.





which shows the value of this chemistry — it still can bring useful grassweed control.

"Perhaps not for blackgrass, but it does still do a useful job."

Turning focus to EMR and again, Stuart says this is a widespread issue — though arguably not as much of a problem as some of the ALS/ACCase resistance issue. "The question really around the test for EMR is what is it telling us? The likelihood of having resistance within your populations is very high, but that doesn't mean soil residual chemistry doesn't work."

Phil adds: "EMR is a bit more of a slow burner. The issues with ALS/ACCase chemistry came as a result of being too reliant on a plethora of contact products in the 1990s and early 2000s, so it's important to be more strategic with EMR chemistry.

"If you know you've got a resistance issue, you can remove these products from your armoury which could help reduce overall pressure on the chemistry."

EMR isn't black and white — it gives different percentages of control depending on individual plants within that population and how resistant they may or may not be, adds Stuart.

However, one of the key differences with residual chemistry is that growers are targeting the blackgrass at its youngest stage to hit it before it has a chance to develop or build mechanisms to break down chemistry.

Stuart adds that BASF has conducted studies with Rothamsted Research using products including Crystal (flufenacet+ pendimethalin) which he says showed they can still perform very well within resistant populations.

ADAS' Sarah Cook says ADAS has received an increased number of samples this year for its herbicide resistance testing service. "It's important to stress that we do see a wide range in the levels of resistance. If you know what your specific resistance status is, it gives you the opportunity to select products which will actually help to control blackgrass.

"ALS resistance, for example, is widespread and we've seen a rapid rise in resistance levels in blackgrass since Atlantis was introduced, so using ALS inhibitors where resistance is high can be a waste of money and time."

When it comes to resistance management, 41% of growers said it has a big impact on decision-making on farm, and a further 43% noted it having a moderate impact.

Phil says that in this decision-making process, it's important to weigh up both the economic and environmental factors of cultural controls — and this is a perhaps a rather overlooked part of the IPM strategy. "Cultural methods may be better for weed control, but if they're going to cost a fortune to implement, for example, then that's not a good thing either in holistic crop production terms."

He also stresses that though cultural methods should be the initial port of call for blackgrass management, chemistry is still an important part of the solution. "You can do everything right from a cultural perspective, but if you miss a pre-em spray because of the weather you could still be exposing yourself to blackgrass burdens — even a small percentage of blackgrass can really stack up in the field. We have paid the price on some fields as a result of concentrating on drilling later and later and then the autumn weather closes in."

Though cultural methods should be the initial port of call for blackgrass management, chemistry is still an important part of the solution, reckons Phil Jarvis.

As manufacturers, including BASF, continue to try and introduce new modes of actions, keeping resistance management at the forefront of priorities will both protect and extend the longevity of products to ensure that chemical controls remain part of the IPM strategy for weed control, says Stuart.

Sarah agrees: "Anything new that comes to market must be stewarded carefully. We have failed with products like Atlantis, so better strategies are essential to ensure we maintain the effectiveness of any new modes of action over a longer period of time." ■

Winner announcement

Congratulations to our winner Andrew Stevens from Gloucestershire who responded to the *CPM*/BASF survey on blackgrass and has won the fabulous prize of a Davis Vantage Pro2 wireless weather station worth £650.

Andrew responded to the survey and completed the tie-breaker question, which asked respondents to explain what makes them most hopeful about weed control in the future.

His answer was: "I am much more hopeful about weed control because by experimenting we are continually learning each year how to improve our weed control. Building up this knowledge is giving us a good grounding in understanding what works and what doesn't, enabling us to capitalise on this and improve our weed control each and every year."

The answer demonstrated a sound understanding of the importance of a holistic approach to weed management and tweaking strategies which impressed the judges.

To take part in the next survey, make sure we have the correct details for you by emailing angus@cpm-magazine.co.uk