Bayer CropScience

The four building blocks of black-grass control

Black-Grass Task Force
Your team of black-grass experts

Where black-grass exists on land in arable production, it must be controlled. Its competitive and prolific nature makes it not only one of the most yield-robbing weeds, but one that can affect the whole rotation.

Defeating black-grass requires a long-term approach across multiple crops within the rotation, where each method of control builds on the success of the last.

The Black-Grass Task Force has put together this booklet to help you get better control and reduce the population of black-grass on your farm. We've grouped the advice into four 'building blocks' to help you put together a robust and effective control strategy.

The four building blocks of black-grass control

For optimum black-grass control this season, protect against growing resistance with these four building blocks of control from the Black-Grass Task Force. Not only can black-grass reduce yields, it can affect entire rotations. So look out for more information on checking your populations. Coming soon.

Visit bayercropscience.co.uk/bgtf for more expert advice.

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PG 04-06

Check your population.

Summer is a great time of year for starting to get to grips with your black-grass population. Once plants have grown above the crop canopy, take time to confirm the location of your worst patches and the number of plants/m^2. It is also the time to take seed samples for resistance testing.

PG 07-09

Cultivations are our best defence against the build-up of black-grass populations; they can prevent yield loss from the outset.

Whether you choose to create a stale seedbed, plough, or min-till, cultivations as part of your cultural control strategy can reduce black-grass levels before it has a chance to compete with the crop for light, water and nutrients.

PG 10-12

Crop competition gives black-grass a hard time.

By delaying drilling, choosing a more competitive variety and/or increasing seed rates, you can make it harder for black-grass to grow and reproduce.

PG 13-21

Chemistry is the back-stop of any robust control programme.

Choose herbicides with different modes of action throughout the rotation to reduce the selection pressure. And use them at the right time. For residuals, this is at true pre-emergence – within 48 hours of drilling the crop. For post-emergence applications in autumn, spray your contact herbicide when black-grass is at the 1-3 leaf stage.

Check

When black-grass is mature and seed heads are visible above the crop:

1 Check the location and quantity of your black-grass

Knowing where your worst affected patches are and how many plants have survived a control programme is useful information, especially when it is gathered annually. Year-on-year data can be analysed to identify patterns such as which products are most effective and whether populations are rising or falling.

These records can help when time is short and fields need to be prioritised. When delaying drilling for example, leave fields with the highest populations until last.

Where particularly dense patches are identified, consider patch spraying with glyphosate. While there will be some crop loss, you'll prevent seed return and preserve yield in subsequent crops for years to come.

Aerial mapping is the most accurate method of recording the location and number of surviving black-grass plants but where that isn't possible, crop walking with a map and marking the location and numbers by hand is a good option.

2 Check the resistance status

Knowing whether resistance exists within your black-grass population helps when choosing a herbicide programme. Two of the four resistance tests, the Rothamsted rapid resistance test (petri dish test) and the pot test, require mature seed samples.

Gather a cup full of seed by walking in a ‘w’ shape across the field, taking black-grass seed as you go.

Only take seed that will shake easily from the seed head. If you have to use force by digging in your thumbnail, the seed isn’t ripe and the resistance tests will be less reliable.

If the seed is damp when collected, air dry and place in a paper bag or envelope to send to the laboratory.

Cultivations

Before turning to herbicides, consider if you could:

1 Fallow the worst affected fields as this can reduce black-grass by up to 70%*

Research shows the black-grass seed-bank can be depleted by 70-80% per year of fallow, provided seed return is prevented, emerging seedlings are controlled and sufficient time elapses between cultivating and drilling the next crop.

2 Plough to reduce black-grass by up to 69%*

Ploughing buries freshly-shed seed to a depth where it can't germinate. It's a good method of gaining control in situations where there are high levels of seed return in a given year. Ensure soil is fully inverted for maximum effect. However, remember that ploughing can also be detrimental, as it can bring previously-buried seed back to the surface.

3 Create a stale seedbed and reduce black-grass emergence in the crop

Cultivating soils and allowing weeds to chit, before removing either with cultivations or glyphosate, is an effective method of controlling a percentage of the black-grass population before it threatens crop yields. Stale seedbeds are most effective when the season permits them to be repeated.

Crop

When choosing and sowing your crop, bear in mind:

1 Sowing a spring crop in the worst affected fields can reduce black-grass by up to 88%*

Spring cropping facilitates the creation of stale seedbeds through the winter, allowing you to remove the vast majority of your black-grass population before sowing the crop. Depending on the crop chosen, it can also provide an opportunity to use herbicides with different modes of action and to grow more competitive crops.

2 Delay drilling. It increases the opportunity for stale seedbeds and further reduces black-grass emergence in the crop

Black-grass germination peaks in the months of September and October. On average more than 40% of the population will germinate during this period. By delaying drilling, you give yourself more time to create stale seedbeds and repeat glyphosate applications, increasing the effectiveness of your pre-drilling herbicide control.

3 Growing more competitive crop varieties reduces black-grass by up to 22%*

Crops and weeds compete for light, water and nutrients. By sowing a more competitive variety, you can make it hard for black-grass to establish and grow, reducing your black-grass competitiveness.

4 Drilling higher seed rates reduces black-grass head numbers by up to 26%*

Higher seed rates improve the competitiveness of the crop and give weeds the minimum area to establish themselves.

Chemistry: pre-ems

Get the most from your pre-emergence herbicides by:

1 Choosing the most effective product as the basis of your black-grass control programme

Choose Liberator (flufenacet + DFF) as your pre-em; it has been proven in trials to be little affected by resistance. Don't compromise on your pre-emergence grass-weed control, as subsequent spray opportunities may be limited by the weather.

2 Choosing a product that, in the event of adverse conditions, will cause minimal damage to the crop

Autumn conditions can be challenging for crops, especially as they get established. Some products are potentially more damaging to the crop than others, so minimise risk by choosing a pre-em herbicide like Liberator which is proven to be effective on weeds but kinder to crops, even in adverse conditions.

3 Tank-mixing

Tank-mixing a small number of pre-em herbicides can increase control at this timing, however:

- **BEWARE:** tank-mixing actives may increase the risk of crop damage above and beyond that of individual products.
- **BEWARE:** some actives have increased potential to damage crops if they are emerging at application.

If in doubt check with your agronomist.

4 Preparing a fine, consolidated seedbed

Pre-emergence herbicides have a residual action. With a little moisture, they form a continuous layer of chemical on or in the soil through which the roots and/or shoots of emerging grass-weeds grow and take up the active substance.

Clods create spray shadows and can break down during the winter, releasing seed outside the zone created by the pre-em herbicide. Good seedbed quality improves both the efficacy and crop tolerance of your pre-emergence treatment. If required, roll the seedbed before your pre-em application.

5 Removing excessive straw or trash

Straw and trash lying on the seedbed block the pre-emergence spray from making contact with the soil surface and can absorb the active substance. This can prevent the product from creating that continuous layer – and so reduce control from the pre-em.

6 Ensuring appropriate sowing depth

Check the label. Most products require at least 32mm sowing depth into a consolidated seedbed. This puts the roots of the crop outside the pre-em continuous layer.

7 Applying your pre-em product at pre-emergence timing

When pre-emergence products are applied at peri or post-emergence, the roots and shoots of weeds are already outside the pre-em layer. Consequently, pre-em efficacy declines substantially if application is post-emergence.

Not only that, but crop tolerance to some products is also reduced when applied once the crop is emerged.

When balancing timing with moisture availability, timing must come first; while the efficacy of pre-em products may be reduced during prolonged dry periods, the control provided is typically greater than that given by a delayed application to emerged weeds. Provided conditions allow, aim to apply your pre-em within 48 hours of drilling.

8 Ensuring even coverage of the soil surface

Maximise the efficacy of your pre-em by applying it using an appropriate spray quality and volume. Check the label and follow the advice provided by the manufacturer.

Please note:

- DO NOT apply when soil or weather conditions are not suitable
- DO NOT use on waterlogged soils as efficacy and crop tolerance may be reduced
- DO NOT cultivate or disturb the soil surface after pre-em application
- Disruption of the treated soil surface will reduce control

Chemistry: post-ems

Optimise your post-emergence herbicide by:

1 Ensuring cultural controls and pre-emergence herbicides come first

Post-em herbicides are just one part of the wider control programme. They will be most effective applied after cultural controls and pre-emergence herbicides have removed the majority of the population.

2 Applying your Atlantis WG at the right time

Atlantis WG (mesosulfuron + iodosulfuron) remains the most effective product to use post-emergence for control of black-grass. Applying it in the autumn when black-grass is at the 1-3 leaf stage, and actively growing, is likely to be most effective. When left until the spring, the canopy closes and makes post-em herbicides more difficult to apply. Moreover, more mature black-grass is better able to metabolise the active substances, survive treatment and steal yield from the crop. Time applications when leaves are dry – after the morning dew has burnt off and before it settles in the evening. Allow sufficient drying time in order for the contact herbicide to become rainfast.

3 Tank-mixing a post-emergence herbicide with a strong residual partner

Particularly in a season where emergence is protracted tank-mixing Atlantis WG with an effective residual partner such as Liberator will increase control.

– **BEWARE:** tank-mixing actives may increase the risk of crop damage above and beyond that for the individual products.

If in doubt, check with your agronomist.

4 Following manufacturer guidelines for application technique to optimise control

When sprayed at the optimum timing (1-3 leaves), the thin vertical leaves of black-grass are a difficult target. Ensuring that the herbicide not only hits this target but sticks to it, is vital for optimum control.

Forward speed, nozzle choice, water volumes and boom height will all affect the overall control. All manufacturers conduct extensive research into optimising product performance, so follow their recommendations carefully.

For Atlantis WG this means:

– Ensure optimum boom height

– Achieving a fine-medium spray quality – flat fan nozzles have been the most reliable in our trials

– A forward speed of no more than 12km/h

– Using the adjuvant biopower to ensure maximum uptake

– Applying when leaves are dry

– Allowing at least two hours drying time

THE FACTS ABOUT BLACK-GRASS

– 80% of black-grass seed germinates in autumn**

– More than 20% of black-grass will germinate in September**

– More than 20% of black-grass will germinate in October**

– Each black-grass plant is capable of producing 20 seed heads with 100 seeds per head***

– 40-60% of seed shed by a black-grass plant is viable***

– Black-grass seed can remain viable for up to 5 years**

– Just 12-25 plants/m^2 can steal 5-10% yield from a crop of winter wheat****

*Source: Black-grass: the potential of non-chemical control. Dr Stephen Moss and Dr Peter Lutman, June 2013

**Source: HGCA, Managing weeds in arable rotations – a guide, Summer 2010

***Source: Lutman P J W, Moss S R, Cook S & Welham S J. A review of the effects of crop agronomy on the management of Alopecurus myosuroides (2013)

****Source: Blair, Cussans & Lutman, Proc. 1999 Brighton Conference – Weeds, 753 – 760 cited by Lutman P J W, Moss S R, Cook S & Welham S J. A review of the effects of crop agronomy on the management of Alopecurus myosuroides (2013)

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