Autumn grass weed control in cereals and oilseed rape

Maintaining grass weed control

Effective control of annual grass weeds is essential to maintain rotations of mainly autumn-sown crops. Herbicide resistance, the potential loss of key herbicides and the absence of any new modes of action mean there will be greater reliance on fewer herbicides in the future. There is also concern over the potential for contamination of water arising from some key active ingredients (e.g. metazachlor, carbetamide and propyzamide). New weed control strategies will need to focus on herbicides that are applied pre- or early post-emergence in combination with non-chemical control methods.

Black-grass in cereals

In the absence of a post-emergence ALS-inhibiting product, such as Atlantis WG (iodosulfuron + mesosulfuron), effective control of black-grass in winter wheat using ‘stacks’ and ‘sequences’ of pre- or early post-emergence herbicides was only achieved at low to moderate black-grass populations (fewer than 100 heads/m², approx. 10-15 plants/m²). Effective control in this instance is defined as more than a 95% reduction in heads.

Similar results were also found for ‘stack’ and ‘sequence’ programmes in winter barley. This suggests that ‘stacking’ and ‘sequencing’ approaches alone are most likely to be sufficiently effective at low to moderate black-grass populations. Where populations are high, additional cultural measures will be necessary.

In the absence of control from Atlantis WG, herbicide programmes tend to rely on a limited number of key active ingredients. The most effective programmes tended to:
– need at least three active ingredients
– include flufenacet

Prosulfocarb and tri-allate also featured commonly in effective programmes and a range of other active ingredients have also been used to good effect (Figure 1). For a given series of products, there was little difference between ‘stacking’ and ‘sequencing’ in the effectiveness of black-grass control. At times, it may be expected that a ‘sequence’ of active ingredients will be more effective than a ‘stack’ (single application) of the same active ingredients. For example, sometimes active ingredients may be more effective when applied as components of a ‘sequence’, in conditions that are suited to herbicide activity, than when applied as a ‘stack’ at a single timing, when conditions may be less favourable.

Figure 1. An example of incremental control of black-grass heads in winter wheat (Lincolnshire 2010). All products used at full label rate.

For a given target weed:
Stacking is when more than one active ingredient or herbicide product is applied at the same time.

Sequencing is when different active ingredients or mixtures of active ingredients are applied in close succession.

Barren brome

A suitable programme tends to be more reliable than the use of pre- or post-emergence treatment alone, especially at high populations.

Black-grass in oilseed rape

For both carbetamide and propyzamide dose and timing are important. A reduced dose at a time conducive to good efficacy may be as effective as a higher dose at a less favourable time.

Particularly where grass-weed levels are high, non-chemical management practices should also be used.

In this project, chlorotoluron was used as a separate product. It is now only available in co-formulation with diflufenican.

Always consider your local conditions and consult a professional agronomist if necessary.
Annual meadow-grass in cereals

A range of approaches can give control of annual meadow-grass that is similar to or better than isoproturon (IPU). They can also provide useful and cost-effective control of a range of broad-leaved weeds. Reductions in ground cover, providing more than 90% control of annual meadow grass, can be delivered through pre- and post-emergence strategies. Examples include flufenacet, prosulfocarb or pendimethalin-based approaches (pre-emergence) and chlorotoluron or some ALS-inhibiting products (post-emergence). With the exception of ALS-inhibiting products, the approaches are suitable for use in both wheat and barley.

Barren brome (sterile brome) in cereals

In wheat and barley, barren brome tends to be most effectively controlled by autumn applications, provided weather and soil conditions are conducive to herbicide activity. Non-chemical management practices should also be considered, particularly where brome levels are high.

In wheat, ALS-inhibiting products alone can be very effective (eg products containing iodosulfuron + mesosulfuron or pyroxulam). However, particularly at high populations, a programme including a pre- or early post-emergence herbicide in sequence with an ALS-inhibiting product is more reliable. The most effective programmes have also tended to feature flufenacet and/or tri-allate at a pre- or early post-emergence timing.

In barley, where there is no option for the use of ALS-inhibiting products, management can be more difficult. Autumn pre- or early post-emergence approaches can be used and supplemented in stacks or sequences with chlorotoluron (check variety susceptibility) or an additional dose of flufenacet (typically as a sequence).

Black-grass in oilseed rape

– Oilseed rape remains very important for rotational weed control, as carbetamide and propyzamide are not affected by resistance in black-grass
– Metazachlor is a commonly used pre- or early post-emergence herbicide but restrictions on cumulative dose of metazachlor over a 3-year period are now in effect
– Alternative options, such as napropamide and tri-allate, can deliver similar control of black-grass plants to metazachlor (Figure 2)
– The most effective black-grass control programmes are generally based around propyzamide and/or carbetamide

Dose and timing influence carbetamide and propyzamide performance and a reduced dose at a time conducive to good efficacy may be as effective as a higher dose at a less favourable time.

The strongest approaches for the control of black-grass have tended to involve a suitable mid-autumn residual (propyzamide or carbetamide) in ‘stack’ or ‘sequence’ with other herbicides (eg a sequence with a metazachlor-based product).

Further information

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Managing weeds in arable rotations – a guide (HGCA, 2010)
Oilseed rape herbicides and water protection (ISO9: HGCA, 2009)
PR466: Integrated management of herbicide resistance (HGCA, 2010)

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