Grassweed and cereal sensitivity to herbicide rates

Key Points

- Post-emergence applications of Bladex + Gardoprim, Gardoprim + Glean, Turonex and Trophy each provided good control of the range of grassweeds investigated in this trial.
- Bladex + Gardoprim, Gardoprim + Glean and Turonex caused some visual damage in the wheat at the standard rate. 75% of the standard rate of all treatments except Achieve and Escort produced slight damage in barley.
- The other herbicides evaluated had too narrow a spectrum to be useful, although good weed control of specific weeds occurred.
- Soft brome was best controlled with Bladex + Gardoprim or Gardoprim + Glean.
- Prairie grass was best controlled with Turonex or Glean + Gardoprim.
- Both Italian and perennial ryegrass were well controlled with Bladex + Gardoprim, Turonex and Gardoprim + Glean. Perennial ryegrass was particularly susceptible to Escort.
- Topik + Treflan, Turonex and Achieve were highly active on oats. Low rates of Bladex + Gardoprim looked to be a possible option as a grassweed herbicide in oat crops.
- Turonex was the only registered treatment and provided useful control of the grass weeds including oats.
- Herbicides applied at GS11 appeared to give useful broadleaf weed control.

Introduction

Grass weeds may occur at low and non-competitive levels in cereal crops, but present problems in other crops in the rotation, especially as physical contaminants in seed crops. Controlling grassweeds that harbour take-all is also a particularly important consideration for disease management in cereals.

The purpose of this trial was to indicate potential herbicide options for grass weed control in cereals and to identify potential rates for evaluation in a future trial.

Eight herbicide treatments were evaluated, applied either alone or as mixtures. Note that non-registered products were included. The standard rate (Table 1) was used to determine a start concentration that was four times that of the standard rate. Some herbicide mixtures were selected to approximate commercial mixtures used in Europe or Australia.

- The Bladex + Gardoprim mixture is similar to ‘Angle’, used for annual dicots and annual poa control in the UK.
- Topik + Treflan is similar to ‘Hawk’ used in the UK on winter wheat for annual dicots, blackgrass, rough meadow grass and wild oats.
- Escort contains the same active ingredient (different concentration) as Ally used in winter wheat mostly for broadleaf weed control.
- Sulfosulfuron is similar to Monitor which is newly registered in the UK for control of the brome species, and will also control couch/twitch.

The cultivars used in the trial included: Hussar wheat, Regatta barley, Matua prairie grass, Nui perennial ryegrass, Concord Italian ryegrass and Massif oats. Wild phalaris and soft brome were used. Herbicides...
were applied (Table 1) when the cereals and most of the grasses had 1 leaf emerged (8-9/10/01). The Escort and Sulfosulfuron treatments were applied when most grasses were at the 2-3 leaf stage (26/10/01) and the wheat and barley was at the 3 leaf to 1 tiller growth stage. The Achieve was applied at a similar growth stage but slightly later on 2/11/01.

**Table 1. Herbicides used in log sprayer trial and their “standard rate”.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Standard rate</th>
<th>Application timing</th>
<th>Approx</th>
<th>cost $/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieve</td>
<td>900g</td>
<td>GS13-21</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td>Bladex + Gardoprim</td>
<td>0.61/ + 0.52</td>
<td>GS11</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>Escort</td>
<td>10g</td>
<td>GS13</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Glean + Gardoprim</td>
<td>12g + 1.5/</td>
<td>GS11</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Sulfosulfuron</td>
<td>38g</td>
<td>GS13</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Topik + Treflan</td>
<td>0.05/ + 0.96/</td>
<td>GS11</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Trophy</td>
<td>4.5/</td>
<td>GS11</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Turonex</td>
<td>3.0/</td>
<td>GS11</td>
<td>55</td>
<td></td>
</tr>
</tbody>
</table>

GS11=1 true leaf, GS13=3 true leaves, GS21=1 tiller

**Wheat**

Several of the early post emergence herbicides tested (Bladex + Gardoprim, Gardoprim + Glean and Turonex) caused some visual damage in the wheat when the standard rate (Table 1) was used. The damage incurred (10-20% visual damage) was surprising because in plots taken for yield (FAR Arable Update Cereals No.106), the same treatments had no effect on wheat yield and no stunting was observed. Hussar is possibly more sensitive than other cultivars, or the timings may have been too early at GS11. Interestingly, in the UK 2.5 l/ha of the equivalent product to Turonex is the maximum permitted for any one crop. Also the UK label recommendation for the ‘Bladex + Gardoprim equivalent’ application window is GS12-22. However what is clear is that at the standard rates (where some damage was recorded on Hussar), satisfactory control of all grass weed species in the trial was obtained with particular herbicide treatments.

**Barley**

Barley was sensitive to the standard rates of all the treatments except Escort and Achieve where, even at 150% of the standard rate, there was no damage. Other treatments gave up to 13% visual damage at the 75% rate. The standard rate equivalents gave no yield depressions in barley in other trial work (FAR Arable Update Cereals No.106), although Turonex at the 75% rate may be suspect. Sulfosulfuron slightly damaged the barley at the 50% rate, which gives reason to the fact that it is not registered on barley in the UK.

**Bromes**

Some variation was noted between the two brome species; soft brome and prairie grass. No herbicide gave 100% control at rates that are safe on wheat or barley. Gardoprim + Glean gave 90% control of both species at the standard rate. Further control was achieved with Bladex + Gardoprim, Trophy, Sulfosulfuron and the Gardoprim + Glean at the 125% rate on soft brome alone. Turonex gave the best control of prairie grass; 95% at the standard rate. At the 75% rate only the Gardoprim + Glean treatment maintained good control: 75% and 88% for the soft brome and prairie grass respectively. Escort and Topik + Treflan had no effect on soft brome. Achieve had no effect on either of the brome species.

**Ryegrass**

Ryegrass was generally more susceptible to the herbicides tested than the brome species. Control levels of both perennial and Italian ryegrass were higher than 95% at the standard rates for Gardoprim + Glean, Trophy and Turonex. Bladex + Gardoprim was reasonable, offering 85-90% control of both species at the standard rate. The Topik + Treflan treatment was better on Italian ryegrass (90% control) compared to perennial ryegrass (45%) and this is consistent with the susceptibility of Italian ryegrass to Topik noted in other trials. Perennial ryegrass was still susceptible to Escort at 50% of the standard rate while no effect was seen at any rate on Italian ryegrass. Achieve was also active on perennial ryegrass but only achieved a moderate level of control of Italian ryegrass. Turonex and Trophy gave good control of both ryegrass species at 50% of the standard rate. Sulfosulfuron gave 10%control of both species at the standard rate – possibly an option for controlling brome in ryegrass crops?

**Phalaris minor**

Phalaris was relatively easy to control with all five of the early post emergence herbicides giving near 100% control at the 75% rate. Even at the 50% application rate these provided >75% control. Of the later post emergence treatments Sulfosulfuron was the best treatment with 83% control.

**Oats**

The results would relate equally to wild oats. For oats as a crop there are few herbicide options available for grass weed control. A 50-75% rate of Gardoprim + Glean may be a possible option, although a full rate was very damaging. Oats as a weed were more than 90% controlled by Achieve, Turonex and Topik + Treflan at the 75% rates.

**Broadleaf weeds**

GS11 applied herbicides provided good broadleaf weed control in this trial. Using a cost-effective herbicide that provides both grass and broadleaf weed control is an attractive option. See also FAR Arable Update Cereals No.104 where Bladex + Gardoprim and Escort have provided useful activity on broadleaf weeds.

**Acknowledgement**

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