Rhynchosporium control programmes

Symptoms and importance
Rhynchosporium, caused by the fungus *Rhynchosporium secalis*, regularly occurs on barley in wetter parts of the UK, particularly southwest and northern England, Scotland and Northern Ireland.

**In winter barley**, it is common for symptoms to develop over the winter, causing extensive damage to the lower leaves in the early spring and resulting in a major loss of yield if left untreated. The disease can spread to the upper leaves in a wet summer, but most yield loss occurs from the earlier infections.

**In spring barley**, it is rare to see visible symptoms until crops reach mid-tillering growth stages. Most symptoms occur later in the season in spring barley crops. The exception is very early-sown crops.

*Seed infection* leads to widespread symptoms throughout the crop.

*Rain-splash infection* results in localised patches of disease.

*Yield losses* associated with Rhynchosporium can exceed 1.5 t/ha. They are lower in spring barley, but the costs to protect spring crops are lower compared to those required to eradicate the disease in winter barley.

Variatel resistance
In high disease pressure regions, try to select high-yielding winter barley varieties suitable for your market requirements with an HGCA Recommended List rating for Rhynchosporium of 7, 8, or 9. Although managing Rhynchosporium in spring barley with fungicides is more straightforward, try to select varieties with good resistance for the market.

The diversity of *Rhynchosporium secalis* populations means that occasionally populations will exist which are capable of attacking resistant varieties. The resistant winter barley variety Retriever, for example, can develop high disease levels in Lanarkshire. Regular disease monitoring is required for susceptible and resistant varieties.

Control
Once you see the disease in a crop it becomes more challenging to control with fungicides and you have already lost yield.

**In winter barley**, although the disease can develop in the autumn, autumn fungicide treatment is rarely required. Where extensive disease is seen in the early spring (up to GS30), a low dose fungicide mixture can achieve an average yield benefit of 0.2 t/ha. The most important time to control Rhynchosporium is at stem extension (GS30-32), when the disease may already be well established.

**In spring barley**, the first protectant fungicide treatment will be required at mid- to late-tillering (GS25-30). A protectant treatment is important on susceptible varieties in high disease pressure regions to prevent symptoms from developing, particularly in early-sown crops.

**In a wet season**, a later protectant treatment may be required at booting (GS45-49) to protect the upper leaves in winter and spring barley.

The latest application time for many fungicides in malting crops is before the heads have emerged (GS51). Product choice for feed barley is limited once ears have emerged. Check product labels to determine if they are suitable if the last treatment is delayed. In warm weather, the time between booting and ear emergence can be measured in hours.

**Action**

Use the latest HGCA Recommended List to select varieties with high resistance.

Be prepared to protect all varieties with a fungicide in high disease pressure regions. Monitor regularly throughout the season.

Use fungicide mixtures to limit risk of fungicide resistance.

Start your programme early in winter barley. Stem extension (GS31-32) is the most important time to control Rhynchosporium in high disease pressure sites.

In spring barley, use a mixture of protectant fungicides at GS25-30 for effective control before symptoms appear.

In a wet summer, later treatments at booting (GS45-49) will help protect the upper leaves and grain from further infection.

HGCA Fungicide Performance information (www.hgca.com) shows the relative activity of current and new fungicides.

Always consider your local conditions and consult a professional agronomist if necessary.
Fungicide strategy

Fungicide resistance is a threat to the activity of all major fungicides. Use of a single fungicide to control Rhynchosporium can shift the population to become less sensitive to fungicides during the season. **The use of two- or three-way fungicide mixtures is essential to minimise the risk.** Where practical, also try to use fungicides in sequence to limit exposure of a particular fungicide.

Current research suggests *Rhynchosporium* populations in winter barley are less sensitive compared with those in spring barley. There are also differences in sensitivity between populations from different varieties. The practical importance of this is being tested.

Where barley is seen as a low input crop on a mixed farm, it is common for crops to receive a single treatment. The most effective control is, however, best achieved by applying more than one treatment in high disease pressure situations. If crops are treated only once, the fungicide mixture needs to be sufficiently robust to provide effective eradication of the disease present at the time of treatment, provide long term protection and also be sufficiently broad spectrum to protect the crop from other diseases.

<table>
<thead>
<tr>
<th>Protection</th>
<th>Eradication</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strobilurins</strong></td>
<td>✔</td>
<td>Resistance present in France, not yet identified in the UK; must be used in mixtures</td>
</tr>
<tr>
<td><strong>Prothioconazole</strong></td>
<td>✔</td>
<td>Less sensitive isolates can be found, but field performance remains good</td>
</tr>
<tr>
<td><strong>Epoxiconazole</strong></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td><strong>SDHIs</strong></td>
<td>✔</td>
<td>Currently only available in mixtures; if future SDHIs are marketed as straight products they must always be used in conjunction with an alternative fungicide group</td>
</tr>
<tr>
<td><strong>Cyprodinil</strong></td>
<td>✔</td>
<td>Particularly useful early in the season on winter barley because of activity against stem-base diseases</td>
</tr>
<tr>
<td><strong>Chlorothalonil</strong></td>
<td>✔</td>
<td>A useful component of a mixture, particularly at the later timing</td>
</tr>
<tr>
<td><strong>Morpholines</strong></td>
<td>✔</td>
<td>Useful components in a mixture where eradication is required; only provide a short period of protection</td>
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</tbody>
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Full information on fungicide performance and examples of product names are available in the HGCA Barley Disease Management Guide ([www.hgca.com/publications](http://www.hgca.com/publications)).

Overview

- Variety choice is important to minimise disease risk, but resistant varieties can show disease where specific races occur.
- Seed is an important disease source, leading to early infections spread throughout a crop.
- Early control is important to minimise yield losses.
- Treatments for winter barley need to have eradicant activity.
- In spring barley, early treatments are likely to be protectant before symptoms appear.
- Most fungicides show good protectant activity, but a limited range of treatments are effective at eradicating the disease in high pressure situations.
- Molecular diagnostic tests are currently a research tool and not recommended to select stocks until practical advice can be provided on the basis of the results.

Further information

| Simon Oxley, HGCA | simon.oxley@hgca.com |
| Barley Disease Management Guide (updated annually) | |
| Cereal growth stages - a guide for crop treatments ([HGCA, 2009](http://www.hgca.com/diseasecontrol)) | |
| ([www.hgca.com/varieties](http://www.hgca.com/varieties)) | |
| ([www.hgca.com/publications](http://www.hgca.com/publications)) | |
| HGCA Project Report PR470 | |
| HGCA Project Report PR455 | |
| HGCA Project Report PR436 | |

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