Winter barley agronomy: Two vs. Six-row

The introduction of hybrid six-row varieties has led to a number of important management questions
Such as the requirement for PGR treatment and fungicide timing

<table>
<thead>
<tr>
<th>Yield components</th>
<th>Two-row</th>
<th>Six-row</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ears/m²</td>
<td>900-1200</td>
<td>850-900</td>
<td>480-600</td>
</tr>
<tr>
<td>Grains/ear</td>
<td>17-21</td>
<td>30-40</td>
<td>41-51</td>
</tr>
<tr>
<td>Grains/m²</td>
<td>15,000-25,000</td>
<td>19,500-36,000</td>
<td>19,700-30,600</td>
</tr>
<tr>
<td>TGW (g)</td>
<td>50-58</td>
<td>40-45</td>
<td>46-56</td>
</tr>
</tbody>
</table>

A field experiment was carried out over six site/seasons testing fungicide timing and PGR requirement in a Hybrid six-row (Volume) and conventional two-row (Tower) grown at the standard seed & N rates and +25% of these standard rates

Did increasing seed & N rate increase yield?

- No, yield increase from increasing seed & N rate in either a two or a six-row variety
- Yield was similar in both varieties

Does fungicide timings need to change due to row type?

- No, each row type responded similarly to fungicide timing

Notes:

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Do six-rows have a greater need for PGR?

- Yes, there is a greater need caused by increased lodging in six-row variety
- Leading to an increased yield response from PGR treatment in the six-row variety

Fungicides not only controlled disease

- Fungicide treatment significantly reduced the level of straw breakdown (brackling) in both varieties
- Timings at GS31/32 (1 spray) and GS49 (2 spray) having the largest effect.

Take home messages

- There is no evidence to suggest changing fungicide timing based on row type
  - Six-row varieties have a greater need for PGR application
  - Fungicide treatment reduces straw breakdown (brackling)
Identifying susceptibility to improve resistance to Rhynchosporium disease

• Rhynchosporium is key disease on winter and spring barley
• Legislative pressures curtailing fungicide availability
• Project goal is to identify novel, durable sources of genetic resistance against Rhynchosporium

Susceptibility genes (S-genes):
• S-genes are targeted by diseases to promote infection
• Varieties lacking specific S-genes are more resistant
• S-gene based resistance has potential to be more durable than current resistant varieties

Characterisation of disease
Identify and characterise barley S-genes
Generate new barley lines lacking specific S-genes

Notes:

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**Ramularia Leaf Spot (RLS)**

**Identification**
- Rectangular shaped lesion
- Reddish/brown colour
- Ring of yellow around lesion
- Restricted by leaf veins
- Right through the leaf

**Potential Issues?**
- Limited understanding of the disease (since late 1990’s)
- Loss of fungicides (resistance developments & legislation)
- Difficult to predict outbreaks

Notes:

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Is it a problem?

- Yield loss of up to 1 t/ha if untreated
- Resistance to strobs, azoles and SDHI’s...
- Limited varietal resistance available
- Loss of chlorothalonil

Managing the risk

- Grow more resistant varieties??
- Preventative spray at GS 45??
- Try to avoid crops becoming stressed??

Key points

- Multiple sources of infection (seed, stubble, airborne)
- Symptoms often only observed post flowering
- Problem exacerbated in stressed crops
- Correct fungicide timing essential for control

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