The response of spring barley varieties contrasting in lodging resistance scores to N application and plant growth regulator program.

Joseph Lynch¹, Sharon Spratt¹, Deirdre Doyle¹, Lisa Black², Ethel White² and John Spink¹

¹Teagasc CELUP, Oak Park Crops Research, Republic of Ireland
²AFBI, Crossnacreevy, Northern Ireland

Lodging
“The bigger they are the harder they fall”
• Lodging is the displacement of a crop from the vertical
• Cause: the force at the aerial part > strength at the base
• Yield losses and reduced profitability

Irish spring barley – a big crop
• Average yields (2011-15): 6.1 t/ha, 117 bu/ac.
• Around 1000 shoots/m² needed to ensure a potentially profitable crop.
• Therefore, lodging management is key.
• How much can variety choice contribute to lodging management?

Study aims
Do varieties with contrasting lodging resistance...
1. … respond differently to increasing N application rates?
2. … respond differently to PGR programs in high lodging risk crops?

Exp. 1 N rate x varietal lodging resistance

<table>
<thead>
<tr>
<th>Variety</th>
<th>Lodging resistance rating (1-9)</th>
<th>N rate (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propino</td>
<td>7 – Good</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>180</td>
</tr>
<tr>
<td></td>
<td></td>
<td>240</td>
</tr>
<tr>
<td>Sanette</td>
<td>6 – Moderate</td>
<td></td>
</tr>
<tr>
<td>Tesla</td>
<td>5 – Poor</td>
<td></td>
</tr>
</tbody>
</table>

% plots lodged at GS87
Average: Carlow 14, 15 & Belfast 15

Belfast 14
What was different about Belfast 2014

Yield (85%DM; t/ha)

Average: Carlow 14, 15 & Belfast 15

Belfast 2014

Exp. 2 PGR program x varietal lodging resistance

3 x 3 factorial– 3 seasons (2014, 2015, 2016)

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- Effects of PGR programs on lodging differed between varieties of different ratings.
- Effects were not observed on the yield of these crops.
- Yield effect in a high lodging pressure scenario remains unknown.
Summary

- Variation in optimum N between sites > between varieties.
- Good lodging resistance rating varieties had a lower risk of margin loss in a high lodging pressure season.
- Poor lodging resistance rating varieties may require PGRs in high risk crops.

- Choosing varieties with good lodging resistance can reduce risks to margin of spring barley crops at lodging susceptible sites.

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