Foliar diseases in Dutch sugar beet production

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Sugar beet foliar diseases in NL

Powdery mildew (*Erysiphe betae*)
- damage 5-10%

Rust (*Uromyces betae*)
- damage 5-10%

Ramularia (*Ramularia beticola*)
- damage 10-15%

Cercosporina (*Cercospora beticola*)
- damage 40%

Stemphylium (*Stemphylium* sp. nov)
- damage 40%
Management of foliar diseases (NL)

- control of all 5 fungi
  - cercospora
  - stemphylium
  - ramularia
  - rust
  - powdery mildew

- damage threshold:
  first spots/infestation
Management of foliar diseases (NL)

1. monitoring

only in case of infestation

2. application with appropriate fungicide
Warning service for foliar diseases (NL)

- based on samples sent to IRS-Diagnostic Service for proper identification
- warning to monitor fields goes out when symptoms of foliar diseases are found on at least 2 fields with normal sugar beet rotation
- detailed information per warning on www.irs.nl
- growers receive sms from sugar industry

20-06-2014
Time of appearance* foliar diseases (NL)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>3 July</td>
<td>20 June</td>
<td>11 July</td>
<td>12 July</td>
<td>15 July</td>
<td>28 July</td>
</tr>
</tbody>
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* Time of appearance is time of first warning for one or more regions in NL
After first fungicide application

1) start with monitoring again 2 weeks after application (new leaves are unprotected)
2) at least once a week
3) only at appearance of new infestation a new fungicide application
4) start again at 1)

**Monitoring based system**
Fungicide efficacy against *Stemphylium* sp. nov. (2008-2012)

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>Product</th>
<th>Status</th>
<th>Efficacy</th>
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</thead>
<tbody>
<tr>
<td>epoxiconazole + fenpropimorph</td>
<td>Opus Team</td>
<td>R</td>
<td>-</td>
</tr>
<tr>
<td>kresoxim-methyl + epoxiconazole</td>
<td>Allegro</td>
<td>R</td>
<td>-</td>
</tr>
<tr>
<td>trifloxystrobin + cyproconazole</td>
<td>Sphere SC</td>
<td>R</td>
<td>+</td>
</tr>
<tr>
<td>difenoconazole + fenpropidin</td>
<td>Spyrale EC</td>
<td>R</td>
<td>+</td>
</tr>
<tr>
<td>difenoconazole</td>
<td>Score EC</td>
<td>R</td>
<td>(-) / +</td>
</tr>
<tr>
<td>azoxystrobin + difenoconazole</td>
<td>Amistar Top</td>
<td>U</td>
<td>+</td>
</tr>
<tr>
<td>boscalid + pyraclostrobin</td>
<td>Signum</td>
<td>U</td>
<td>+++</td>
</tr>
<tr>
<td>boscalid + epoxiconazole</td>
<td>Venture</td>
<td>U</td>
<td>+++</td>
</tr>
<tr>
<td>pyraclostrobin + epoxiconazole</td>
<td>Retengo Plus</td>
<td>U</td>
<td>++</td>
</tr>
</tbody>
</table>

Status: **R** = registered for sugar beet  
**U** = unavailable (not registered)
**Susceptibility 29 *Cercospora beticola* isolates from NL (2012)**

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>resistant (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>difenoconazole &amp; tetraconazole</td>
<td>51.7</td>
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<tr>
<td>tetraconazole</td>
<td>79.3</td>
</tr>
<tr>
<td>pyraclostrobin</td>
<td>10.3</td>
</tr>
<tr>
<td>trifloxystrobin</td>
<td>34.5</td>
</tr>
</tbody>
</table>

at EC$_{50} >0.6$

Conclusions

- fungicide application at first symptoms is essential for good control of all foliar diseases
- still good control of *Cercospora beticola*, although part of isolates show loss of susceptibility
Thank you for your attention!