Fungicide Performance in Wheat 2010 -2011
**Septoria tritici (Mycosphaerella graminicola)**

In 2009 and 2010

- Lower pressure due to dry springs
- Mainly protectant activity in 2010

In 2011

A danger of complacency:

- *Septoria tritici* is potentially the most yield damaging pathogen
- Spring rainfall will determine the extent of the epidemic
Below-average Spring rainfall in 2009 & 2010

- Average rainfall in Spring 2009 & 2010
- Comparison with average rainfall from 1971-2000
- Data shows below-average rainfall for March, April, May, and June in 2009 and 2010

Legend:
- 2008
- 2009
- 2010
- Average 1971-2000
New SDHI / triazole mixtures approved

**Aviator235 Xpro**
- 75 g/litre of bixafen + **160 g/litre of prothioconazole**
- new active ingredient (bixafen) and formulation (Xpro)
- version tested contained 150 g/litre prothioconazole
- evaluated in HGCA trials since 2008.

**Seguris**
- 125 g/litre of isopyrazam + 90 g/litre of epoxiconazole
- new active ingredient (isopyrazam) in wheat
New SDHI / triazole mixtures approved

Succinate Dehydrogenase Inhibitors (SDHI’s)
- a new mode of action for wheat foliar disease control
- same chemical group as boscalid (in Tracker)
- single site mode of action: use in mixtures e.g. with triazoles.
## Fungicides included

<table>
<thead>
<tr>
<th>Product Used</th>
<th>Full Dose (l/ha)</th>
<th>Active Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviator Xpro</td>
<td>1.25</td>
<td>75 g/l bixafen + 150 g/l prothioconazole</td>
</tr>
<tr>
<td>Seguris</td>
<td>1.0</td>
<td>125 g/l isopyrazam + 90 g/l epoxiconazole</td>
</tr>
<tr>
<td>Brutus</td>
<td>3.0</td>
<td>37.5 g/l epoxiconazole + 27.5 g/l metconazole</td>
</tr>
<tr>
<td>Opus</td>
<td>1.0</td>
<td>125 g/l epoxiconazole (SC)</td>
</tr>
<tr>
<td>Ignite</td>
<td>1.5</td>
<td>83 g/l epoxiconazole (EC) (from 2010)</td>
</tr>
<tr>
<td>Proline</td>
<td>0.8 (0.72)</td>
<td>250 g/l prothioconazole (275 g/l prothioconazole) (from 2010)</td>
</tr>
<tr>
<td>Proline275</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IZM solo</td>
<td>1.0</td>
<td>125 g/l Isopyrazam</td>
</tr>
<tr>
<td>Comet200</td>
<td>1.25</td>
<td>200 g/l pyraclostrobin</td>
</tr>
<tr>
<td>Firefly</td>
<td>1.5</td>
<td>50 g/l fluoxastrobin + 100 g/l prothioconazole</td>
</tr>
</tbody>
</table>
Septoria tritici protectant activity 2008 - 2010 (all sites)

% Septoria tritici

Dose (proportion of full label rate)

- Opus
- Proline
- Aviator Xpro
- Isopyrazam*
- Seguris
- Brutus

* only available in mixtures
Septoria tritici eradicant activity
2008 - 2010 (all sites)

n=7 trials

* only available in mixtures
Yield t/ha (single spray treatments)  
*Septoria tritici* sites 2008 – 2010

n=11 trials
Fungicide Performance *Septoria tritici*
Half label rates at T1 & T2: 2008 Yields

<table>
<thead>
<tr>
<th>Product</th>
<th>Yield t/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated</td>
<td></td>
</tr>
<tr>
<td>Bravo</td>
<td>9.0</td>
</tr>
<tr>
<td>Opus</td>
<td>9.5</td>
</tr>
<tr>
<td>Proline</td>
<td>9.5</td>
</tr>
<tr>
<td>Aviator Xpro</td>
<td>10.5</td>
</tr>
<tr>
<td>Seguris</td>
<td>10.0</td>
</tr>
<tr>
<td>Ennobe</td>
<td>10.0</td>
</tr>
<tr>
<td>Brutus</td>
<td>10.0</td>
</tr>
</tbody>
</table>

n=4 trials
Fungicide Performance *Septoria tritici*
Half label rates at T1 & T2: 2010 Yields

n=3 trials
Fungicide Performance *Septoria tritici*
Half label rates at T1 & T2: 2008 – 2010

n=11 trials
Septoria tritici activity 2010 (two sites)

Protectant

n = 2 trials

Eradicant

Dose (proportion of full label rate)

% S. tritici

Dose (proportion of full label rate)

Opus

Ignite

HGCA
Summary: *Septoria tritici* and Yield

*When compared as single or two-spray treatments:*

- Combinations of bixafen + prothioconazole (as Aviator Xpro) and isopyrazam + epoxiconazole (as Seguris) add substantially to septoria control compared to Proline or Opus alone;
- Aviator Xpro has given similar level of septoria control to Brutus, and Seguris has shown comparable protectant activity;
- Aviator Xpro has given an average yield advantage of 0.35 t/ha over best triazole treatment (for half label rates applied twice);
- Seguris has given yields that are at least as good as Brutus;
- Ignite at least as effective as Opus against septoria in 2010.
Brown rust: 2011 – a low risk season?

Brown rust development slowed by:

- **Frosts**
  - affecting spore survival

- **Overwinter temperatures**
  - reducing infection efficiency
  - extending latent period

- **However, many varieties are at risk**
  - over 40% of UK wheat area rated 4 or less
  - susceptible varieties include:
    - Cordiale
    - Solstice
    - Grafton
    - Duxford
    - JB Diego
    - Gallant
Brown rust
2008 and 09

- Opus
- Proline
- Aviator Xpro
- Isopyrazam*
- Brutus
- FireFly
- Comet

* only available in mixtures
Yellow rust

2010

• Epidemic checked by winter frosts and dry spring
• Significant disease developed in some areas from April onwards

2011

• Early epidemics now unlikely
• April / May threat large, if conditions favourable
  – Oakley and Robigus account for >10% of sown area
  – Further 25% of area rated 5 or less
Yellow rust 2008 and 2009

- Opus
- Proline
- Aviator Xpro
- Isopyrazam*
- Brutus
- FireFly
- Comet

*Dose (proportion of full label rate)

* only available in mixtures
Powdery mildew

2010
• Spring conditions generally too dry
• Slow N uptake / thin crops reduced pressure

2011
• Found widely in autumn 2010
• Later sowings / backward crops likely to favour disease development
• Significance will depend on spring conditions
2009 Half label rates at T1 and T2 – mildew

* only available in mixtures
Summary: Other diseases

Yellow Rust
• Brutus and Opus have been the most effective products;
• New SDHI Isopyrazam very active on yellow rust.
• Aviator Xpro gave good control of yellow rust, especially at more than half label rate.

Brown Rust
• Brutus and Comet (pyraclostrobin) highly active on brown rust;
• Aviator Xpro has given very good control, significantly better than prothiconazole alone (Proline).
• Isopyrazam highly active on brown rust

Mildew
• Data from 2009 indicates that Aviator Xpro can give good control, comparable to standard mildewicides.
• Isopyrazam adds useful activity on mildew control
For more information...
Website: www.hgca.com/diseasecontrol
Barley Fungicide Performance 2010 – 2011
New SDHI Products

Siltra Xpro
*bixafen 60 g/l + prothioconazole 200 g/l*

Bontima
*cyprodinil 187.5 g/l + isopyrazam 62.5 g/l*
## Fungicides included

<table>
<thead>
<tr>
<th>Product Used</th>
<th>Full Dose (l/ha)</th>
<th>Active Ingredients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bontima</td>
<td>2.0</td>
<td>187.5 cyprodinil + 62.5 g/l isopyrazam</td>
</tr>
<tr>
<td>Comet200</td>
<td>1.25</td>
<td>200 g/l pyraclostrobin</td>
</tr>
<tr>
<td>Fandango</td>
<td>1.25</td>
<td>100 g/l fluoxastrobin + 100 g/l prothioconazole</td>
</tr>
<tr>
<td>Proline (Proline275)</td>
<td>0.8 (0.72)</td>
<td>250 g/l prothioconazole</td>
</tr>
<tr>
<td></td>
<td></td>
<td>275 g/l prothioconazole (2010 only)</td>
</tr>
<tr>
<td>Siltra Xpro</td>
<td>1.00</td>
<td>60 g/l bixafen + 200 g/l prothioconazole</td>
</tr>
<tr>
<td>Bravo</td>
<td>2.0</td>
<td>500 g/l chlorothalonil</td>
</tr>
<tr>
<td>Tracker</td>
<td>1.5</td>
<td>233 g/l boscalid + 67 g/l epoxiconazole</td>
</tr>
</tbody>
</table>
Rhynchosporium protectant activity
2009 - 2010
n = 4 trials

Dose (proportion of full label rate)

% Rhyncho
Rhynchosporium eradicant activity
2009 - 2010

n = 4 trials

Dose (proportion of full label rate)

% Rhyncho
Net Blotch protectant activity
2010

n = 2 trials

Bontima
Siltra
Proline
Comet
Fandango

% Net Blotch

Dose (proportion of full label rate)
n = 2 trials

Net Blotch eradicant activity
2010

Bontima
Siltra
Proline
Comet
Fandango
Brown rust protectant activity
2008 - 2009

n = 2 trials

Dose (proportion of full label rate)

%Brown rust

Fandango
Bontima
Siltra
Proline
Tracker
Ramularia protection
2009 - 2010 Spring barley

n = 3 trials

Dose (proportion of full label rate)

% Ramularia

Bontima
Siltra
Proline
Tracker
Bravo
Opus
Barley Summary

Siltra Xpro
• Very good control of all foliar diseases tested;
• New standard for rhynchosporium;
• Useful mildew activity.

Bontima
• Very good control of net blotch, ramularia, brown rust;
• Good control of rhynchosporium (but inferior to Proline / Siltra);
• Useful mildew activity.
Thank you
Fungicide performance in oilseed rape 2010 - 11
Phoma leaf spot and stem canker

• Late epidemic in 2009/2010

• Earlier onset in 2010 – October

• Delayed by cold conditions

• Re-infection occurring in crops now
Phoma fungicide trial – spray dates 2010

• cv Catana

• Boxworth sprayed 1 Dec (GS 1,6-1,9) and 15 Feb - 42% phoma at T1

• Terrington sprayed 1 Dec (GS1,6-1,8) and 6 Jan - 47% phoma at T1
Product choice important – use Poraz as a protectant

HGCA phoma canker control Boxworth 2010

LSD = 16.3
L2

Change title - suggestion was 'Choose your product carefully'
laurat, 12/01/2011
Significant responses to full rate Prosaro and Poraz at drought-stressed site

HGCA Fungicide Performance: Phoma control and yield, Terrington 2010

LSD = 0.34

Yield (t/ha)

Prosaro
Proline
Caramba
Sanction
Poraz
Can we tailor this slide to 'Managing the threat? and show how disease control can be reduced from last year, but explain the threats that still remain.

laurat, 12/01/2011
Product performance – moderate disease canker and yield

Source: Six HGCA trials 2006 - 2008
Phoma control

• Good control with fungicides at half dose
• Positive yield trends in low disease situations
• Prochloraz should be used as a protectant treatment
• Responses in drought stressed situation in 2010
• Potential for responses of 0.5 t/ha in 2011
Light leaf spot

• 2010 – epidemic less damaging to yield than usual (cold + dry spring)

• 2011– most crops had at least one autumn fungicide

• Incidence increasing in all regions – CropMonitor
Light leaf spot in spring has been increasing for the last 5 years.
Old logo for Crop Monitor. Will send new one.
laurat, 12/01/2011
Light leaf spot fungicide trial – spray dates 2010

- cv Castille
- Malton sprayed 4 Dec (GS 1,6) and 8 April
- cv NK Bravour
- Aberdeen sprayed 28 Oct (GS1,4) and 26 April
All treatments gave light leaf spot control in Aberdeen - low severity

HGCA Fungicide Performance: Light leaf spot control Aberdeen 26 April 2010

LSD = 1.02

% leaf area affected

Prosaro

Proline

Sanction

Poraz
All treatments gave control of light leaf spot, Malton, N Yorks – no yield differences

HGCA Light leaf spot control (post T2), High Mowthorpe, May 2010

LSD = 0.97
Use resistant varieties for light leaf spot control

(KWS data 16 March 2010 N Yorks)
Large yield benefits from varieties with good light leaf spot resistance

Castille 4.19 Cuillin 4.84 LSD =0.2

(KWS data 2010 N Yorks)
Light leaf spot control

- Importance in England still underestimated
- 15% planted affected at stem extension = 5% yield loss
- Older azoles still giving control and economic responses
- Exploit varieties with good resistance where farms have difficulty controlling light leaf spot
Sclerotinia stem rot in 2010

- Late infection recorded into June
- Sclerotinia infection found after some single fungicide sprays
- Two spray programmes worked well at high risk sites
SkleroPro infection model – Koch et al. 2006

• Minimum requirements for infection:
  
  7°C and 80% RH for 23hr

• Potential decision making tool

• Identifies infection events in England
Enlarge the reference for Koch and give longer explanation of SkleroPro and how it is not a tool that growers can easily use.
Fungicide persistence 3 weeks – needed 2 sprays in 2010

Sklero Pro infection events

AFD
Sclerotinia surveys WOSR England 1986-2010 – low in 2010

% plants affected

- CropMonitor

Year

Crop Monitor logo

laurat, 12/01/2011
## Sclerotinia incidence (% plants)

<table>
<thead>
<tr>
<th>Region</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>1.9</td>
<td>7.9</td>
<td>0.1</td>
<td>1.3</td>
</tr>
<tr>
<td>M &amp; W</td>
<td>2.5</td>
<td>2.0</td>
<td>0.9</td>
<td>0.3</td>
</tr>
<tr>
<td>North</td>
<td>1.6</td>
<td>3.4</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>South East</td>
<td>6.5</td>
<td>6.8</td>
<td>1.8</td>
<td>0.0</td>
</tr>
<tr>
<td>South West</td>
<td>34.7</td>
<td>7.6</td>
<td>0.4</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td>5.7</td>
<td>6.2</td>
<td>0.5</td>
<td>0.7</td>
</tr>
</tbody>
</table>
Crop Monitor logo
laurat, 12/01/2011
Sclerotinia fungicide trial – spray dates 2010

• Hereford cv DK Cabernet
  Sprayed 13 May  GS 4,5

• Essex cv Vision
  Sprayed 5 May  GS 4,5
Products stretched in 2010 by late flowering infection (early June)

HGCA Fungicide Performance: sclerotinia control Hereford 2010

% plants affected

LSD = 5.3

Untreated

0.5

1

Amistar

Compass

Filan

Galileo

Proline

Prosoar

Topsin
Responses c. 1 t/ha from all products, Hereford 2010

HGCA Fungicide Performance: yield responses to sclerorinia control Hereford 2010

LSD = 0.32
Untreated sclerotinia incidence and yield response to control

\[ y = 0.0252x + 0.0545 \]

\[ R^2 = 0.84 \]

(data taken from 3 products at full dose from HGCA-funded Fungicide Performance trials 2006 - 2010)
Action points on sclerotinia control

- Higher risk for next few years
- Sclerotinia control usually justifies high doses
- Spray timing is critical
- Protectant activity for 3 weeks
- Consider 2-spray programmes for high risk sites