Infinito: A unique fungicide with multiple activity for tuber blight control - EU experiences 2005-2008

Eileen Bardsley, Sylvain Tafforeau, Josef Terhardt, Roel Wanningen
Tuber blight

- Yield losses at harvest and during storage
- Tuber protection starts even before the plants initiate tubers in mid-season
- Sporangia and zoospores are washed down from the leaves and from infected stems by rainfall and irrigation
- Sporangia washed down to the soil can remain viable for several months
Tuber susceptibility:

- **Emergence**
- **Active growth**
- **Stable canopy**
- **Bulking**

**Sporangia viability**
15 - 77 days in soil

**Sporangia /zoospores**

90 – 150 days depending on variety
Infinito Features

• A new mode of action based on fluopicolide
• Excellent regulatory profile

• Reliable and consistent high level of potato late blight control on stems and leaves
• Long-lasting activity
• Protection against tuber blight

• Yield enhancing
• Registered for use in all crops – processing, table potatoes and seed
Tuber Infection

- Spore quantity
- Spore mobility
- Spore viability

Always read the label. Use pesticides safely.
How does Infinito work

- Long-lasting and excellent canopy protection
- Protection of new shoots and stems by translaminar and systemic activity
- Strong anti-sporulant activity

**Spore quantity**

- Fast sporicidal activity
- Any zoospores released during rainfall or irrigation are killed by Infinito on leaf surface

**Spore mobility**

- Spore viability reduced through preventing the release of zoospores from sporangia leading to strongly reduced germination

**Spore viability**
Anti-sporulant activity

% Inhibition of sporangia formation

- **Infinito 1.2 L/ha**
- **Tattoo C 2.0 L/ha**
- **Acrobat 2 Kg/ha**

7 days after inoculation - 166,000 sporangia / ml in untreated

Source: Bayer CropScience, Fungicide Research, Lyon
Fast-action of fluopicolide on zoospores

Untreated

Treated with fluopicolide

T + 2.5 minutes
Effect of Infinito

Potential infection sources reaching the soil are eliminated

Spore quantity
Spore mobility
Spore viability

Infinito – Unique multiple action against tuber blight
Field trials :- Treatments and dose rates

All treatments used as detailed below unless stated

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Product Details</th>
<th>Dose Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infinito</td>
<td>fluopicolide+propamocarb</td>
<td>1.2 - 1.6 L/ha</td>
</tr>
<tr>
<td>Ranman</td>
<td>cyazofamid +adjuvant</td>
<td>0.2 + 0.15 L/ha</td>
</tr>
<tr>
<td>Shirlan</td>
<td>fluazinam</td>
<td>0.4 L/ha</td>
</tr>
<tr>
<td>Fubol Gold / Ridomil Gold</td>
<td>metalaxyl-M+mancozeb</td>
<td>1.0 or 2 Kg/ha</td>
</tr>
<tr>
<td>Revus</td>
<td>mandipropamid</td>
<td>0.6 L/ha</td>
</tr>
<tr>
<td>Curzate M WG</td>
<td>cymoxanil + mancozeb</td>
<td>2.0 Kg</td>
</tr>
<tr>
<td>Electis / Unikat Pro</td>
<td>zoxamide+mancozeb</td>
<td>1.8 Kg/ha</td>
</tr>
<tr>
<td>Dithane</td>
<td>mancozeb</td>
<td>2.25 Kg/ha</td>
</tr>
</tbody>
</table>
Tuber Blight Control – Netherlands 2005

% tuber infection

Untreated control 6 x Shirlan 6 x Ranman 6 x Infinito 1.6 L

Source: Applied Plant Research, Lelystad, The Netherlands, 2005
Tuber Blight Control, Netherlands 2005-2007

% Infected tubers (mean of 5 trials)

- Untreated
- Infinito 1.2 L
- Infinito 1.6 L
- Shirlan 0.4 L
- Ranman
- Unikat Pro

Source: Bayer CropScience, The Netherlands
Tuber Blight Control, France 2006

% tuber infection

Source: mean of 2 trials, Bayer CropScience France

Always read the label. Use pesticides safely.
Tuber Blight Control – UK 2005

% tuber infection

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<tr>
<th>Treatment</th>
<th>% Infection</th>
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<tr>
<td>Untreated control</td>
<td>15</td>
</tr>
<tr>
<td>6 x Curzate, 5 x Ranman</td>
<td>0</td>
</tr>
<tr>
<td>5 x Curzate, 3 x Ranman, 3 x Shirlan 0.3 L</td>
<td>0</td>
</tr>
<tr>
<td>6 x Curzate, 5 x Infinito 1.2 L</td>
<td>0</td>
</tr>
<tr>
<td>6 x Curzate, 5 x Infinito 1.6 L</td>
<td>0</td>
</tr>
<tr>
<td>5 x Curzate, 3 x Infinito 1.6 L, 3 x Shirlan 0.3 L</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: SAC, Auchincruive, Scotland 2005
Tuber Blight Control, Northern Ireland 2007

Infinito programme A = 2 x Fubol Gold / Shirlan alternating with Infinito 1.6 L/ha
Infinito programme B = 2 x Fubol Gold / 1x Shirlan, 4 x Infinito 1.6 L/ha, 3 x Shirlan

Agri-Food & Biosciences Institute, Belfast, N Ireland
Tuber Blight Control - Germany 2006

% tuber infection

Source: mean of 2 trials Amtlicher Dienst NRW, Brentler, Germany
Tuber Blight Control, Germany 2008

% infected tubers

Ridomil Gold 2 Kg / 9x Curzate
Ridomil Gold 2 Kg / 7xCurzate/ 2 x Shirlan 0.4L
Infinito prog

Source Bayer CropScience trial, Germany

Always read the label. Use pesticides safely.
Conclusions

- Unique multiple action of Infinito gives all-round protection
  - Long-lasting protectant activity on foliage
  - Protection of new growth
  - Translaminar activity
  - Anti-sporulant activity
  - Sporicidal activity
  - Reduction in spore viability and germination

- Multiple action is the basis for robust control of tuber blight
- High rating (++++) given at Euroblight, Bologna is confirmed
Acknowledgments

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- PPO, Lelystad, Netherlands
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