Recommendations and field performance of INITIUM® based products against *Phytophthora infestans* in potatoes

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13th EuroBlight Workshop, St. Petersburg, Russia, October 11th, 2011

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Initium®
– key benefits of the new active ingredient

• new active ingredient
• high intrinsic efficacy against different infectious stages of peronosporomycetes
• strong adsorption to the wax layer (due to molecule structure, low water solubility, high log $P_{ow}$)
• very good rainfastness
• redistribution on the leaf under the influence of moisture
• excellent crop selectivity
• very favourable regulatory profile

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## Orvego Duo® and Orvego®
- Initium products for the potato segment -

<table>
<thead>
<tr>
<th>Tradenames</th>
<th>Orvego Duo® (Decabane® (UK))</th>
<th>Orvego® (Resplend® (UK))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredients</td>
<td>Initium® + mancozeb</td>
<td>Initium® + dimethomorph</td>
</tr>
<tr>
<td>Mode of action</td>
<td>Complex III inhibitor + Multi-site</td>
<td>Complex III inhibitor + Inhibition of phospholipid biosynthesis and interference with cell wall</td>
</tr>
<tr>
<td>Formulation</td>
<td>80 + 480 g/kg WG</td>
<td>300 + 225 g/l SC</td>
</tr>
<tr>
<td>Target dose rate (potato)*</td>
<td>2.5 kg/ha (= 200 + 1200 gai/ha)</td>
<td>0.8 l/ha (= 240 + 180 gai/ha)</td>
</tr>
<tr>
<td>Target disease (potato)*</td>
<td>Phytophthora infestans &amp; side effect: Alternaria spp.</td>
<td>Phytophthora infestans</td>
</tr>
<tr>
<td>Launched (in EU)</td>
<td>DE, UK</td>
<td>NL, UK</td>
</tr>
</tbody>
</table>

* General information; the country-specific labels must be considered  

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Orvego Duo®

- Mode of action and key benefits -

- excellent preventive efficacy against *Phytophthora infestans*
- side effects against *Alternaria* spp.
- excellent rainfastness
- built-in anti-resistance management with mancozeb as a multi-site a.i.
- flexible use possibilities in sprayprogrammes
Orvego®

- Mode of action and key benefits -

• very good control of several stages in the life cycle of *Phytophthora infestans*
• combination product for preventive, curative and antisporulant efficacy
• user-friendly liquid formulation with low active ingredient input per hectare
• EBDC-free product with a very favourable regulatory profile
Protection of new growth with Orvego® and Orvego Duo®

Combined field/lab study conducted by PPO Lelystad, 2010

Additional internal and external results confirm very good protection of new growing plant material.
Positioning of Orvego® in the Netherlands
(target disease: Phytophthora infestans)

Orvego® (Initium® + dimethomorph)
5 x 0.8 l/ha

e.g. Acrobat®
(dimethomorph + mancozeb)
2.0 kg/ha

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Growth stage

germination

leaf development

shoot development

bud develop. & flowering start of tuber development

fruit and tuber development

senescence

BBCH

0 - 09

10 - 15 - 19

20 - 39

40 - 59

70 - 89

91 - 99
Positioning of Orvego® in the Netherlands

Conclusion: The summary over the two seasons shows that Orvego® provides similar levels of excellent control as mandipropamid when it is positioned in the early block.
Positioning of Orvego® in the Netherlands

Statistical analysis: SNK test, $\alpha=0.05$.

Artificial inoculation (spreader rows): 23.06
First symptoms: beginning of July
Assessment: 25.07

<table>
<thead>
<tr>
<th>Trt. #</th>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>Early block</td>
<td>UTC</td>
<td>Orvego®</td>
<td>mandipropamid</td>
<td>cymoxanil + mancozeb</td>
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<tr>
<td>15.06, 23.06</td>
<td></td>
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<tr>
<td>01.07, 08.07, 15.07</td>
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</tr>
<tr>
<td>Second block</td>
<td>UTC</td>
<td>Acrobat®</td>
<td>Acrobat®</td>
<td>Acrobat®</td>
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<tr>
<td>22.07, 27.07</td>
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<tr>
<td>03.08, 11.08</td>
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</tr>
<tr>
<td>Third block</td>
<td>UTC</td>
<td>cyazofamid</td>
<td>cyazofamid</td>
<td>cyazofamid</td>
</tr>
</tbody>
</table>

Conclusion: Under conditions with early high disease attack, Orvego® shows very good efficacy comparable to mandipropamid and significantly better than cymoxanil and mancozeb.
Positioning of Orvego Duo® in Germany
(target disease: Phytophthora infestans)

Orvego Duo®
(Initium + mancozeb)
4 x 2.5 kg/ha

Acrobat Plus®
(dimethomorph + mancozeb)
6 x 2.0 kg/ha

® = registered trademark of BASF

Growth stage

GERMINATION
BBCH 0 - 09

LEAF DEVELOPMENT
BBCH 10 - 15 - 19

SHOOT DEVELOPMENT
BBCH 20 - 39

BUD DEVELOP. & FLOWERING START OF TUBER DEVELOPMENT
BBCH 40 - 59

FRUIT AND TUBER DEVELOPMENT
BBCH 70 - 89

SENECENCE
BBCH 91 - 99
Season-long sprayed trials from Germany
Summary of 14 trials from 2009-2011

Statistical analysis: SNK test, \( \alpha = 0.05 \).

**Conclusion:** Orvego Duo\textsuperscript{®} provides excellent efficacy levels.
Positioning of Resplend® and Decabane® in the United Kingdom

**Invader®**
(dimethomorph + mancozeb)
2.4 kg/ha

**Resplend®**
(Initium® + dimethomorph)
4 x 0.8 l/ha

**Resplend®**
4 x 0.8 l/ha

**Decabane®**
(Initium® + mancozeb)
4 x 2.5 kg/ha

Growth stage:
- germination: BBCH 0 - 09
- leaf development: BBCH 10 - 15 - 19
- shoot development: BBCH 20 - 39
- bud develop. & flowering start of tuber development: BBCH 40 - 59
- fruit and tuber development: BBCH 70 - 89
- senescence: BBCH 91 - 99
• Orvego and Orvego Duo provide very good efficacy in *Phytophthora infestans* spray programmes.

• Orvego and Orvego Duo can be used without problems in mixtures with other plant protection products, mineral oils and fertilizers.

• Orvego can be positioned flexibly in the spray program: In the period of active plant growth as well as in the period of stable canopy very good disease control is ensured. Furthermore dimethomorph ensures beside preventive efficacy also curative and antispore efficacy. Farmers using Orvego appreciate the easy-to-use liquid formulation.

• Orvego Duo controls *Phytophthora infestans* before the infection can establish. Due to its excellent rainfastness the product ensures long-lasting protection of the crop. Farmers using Orvego Duo appreciate the side effect against *Alternaria* spp.