BASF Corporation
Fungicide Update

IR-4 Food Use Workshop
Cleveland, OH

Sept. 16, 2009

Ted Bardinelli
Metrafenone (BAS 560F) A New Powdery Mildew Fungicide from BASF
Metrafenone Fungicide
Chemical Characteristics

- Totally unique chemistry and mode of action
  - Benzophenone chemical class

- No known cross-resistance

- FRAC MoA Group U8

- Biochemical site of action is not known
  - Actin disruption has been proposed.
  - Actins are structural proteins critical to cell division and function.

- Favorable Toxicity and Environmental Profile
Metrafenone
Proposed Directions for Use on Grapes

- **Use Rate Information**
  - 10.3 - 15.4 fl oz/A rate range (224 – 337 g ai/ha)
  - Spray intervals of 14-21 days
  - Maximum of 6 applications per season
  - No more than 2 consecutive applications
  - Restricted-entry interval (REI) = 12 hours

- **Application Timing**
  - Apply preventively for best performance
  - Any time after bud break to 14 day PHI

- **Adjuvants**
  - Performance may be improved by adding non-phytotoxic adjuvants
    - e.g. organo-silicone adjuvants commonly used in grapes
Anticipated registration with EPA and California in June of 2010 for use in grapes.

Proposed commercial name will be Vivando™.

300 g ai/L SC formulation.

Label will be for powdery mildew (Uncinula necator) only.
Initium®
(BAS 650F)

An innovative fungicide of a new chemical class for the control of oomycetes

Initium is not registered by the US EPA and is not available for sale. This presentation is for informational purposes only and is not intended to promote the sale of the product. Any sale of this product after registration is obtained shall be solely on the basis of the EPA-approved product label, and any claims regarding product safety and efficacy shall be addressed solely by the label.
Initium® – The key benefits

- Reliable & highly active against oomycete diseases with excellent selectivity
- Innovative complex III inhibitor of a new chemical class and a new tool in resistance management
- Very favorable regulatory profile
- Premium preventive action
- Excellent grape cluster efficacy
- World-wide registrations and import tolerances
Reliable & highly active against oomycete diseases with excellent selectivity

**Proposed uses of Initium®**

<table>
<thead>
<tr>
<th>Application rates</th>
<th>200 – 300 g/ha in combination with other fungicides of a different mode of action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spray interval</td>
<td>7 - 14 days</td>
</tr>
<tr>
<td>Fungi controlled</td>
<td>Downy mildew &amp; late blight diseases</td>
</tr>
<tr>
<td>Crops</td>
<td>Grapes, potatoes, tomatoes &amp; other Solanaceae, cucurbitis, leafy &amp; fruiting vegetables, bulb vegetables, brassicas, hops, ornamentals</td>
</tr>
<tr>
<td>Product Category</td>
<td>Target Organism</td>
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<tr>
<td>------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Potatoes</td>
<td><em>Phytophthora infestans</em></td>
</tr>
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<td><em>Phytophthora infestans</em></td>
</tr>
<tr>
<td>Grapes</td>
<td><em>Plasmopara viticola</em></td>
</tr>
<tr>
<td>Vegetables</td>
<td><em>Peronospora spp.</em></td>
</tr>
<tr>
<td>Vegetables</td>
<td><em>Phytophthora spp.</em></td>
</tr>
<tr>
<td>Cucurbits</td>
<td><em>Pseudoperonospora cubensis</em></td>
</tr>
<tr>
<td>Lettuce</td>
<td><em>Bremia lactucae</em></td>
</tr>
<tr>
<td>Hops</td>
<td><em>Pseudoperonospora humuli</em></td>
</tr>
<tr>
<td>Ornamentals</td>
<td><em>Phytophthora spp.</em></td>
</tr>
</tbody>
</table>
Innovative complex III inhibitor of a new chemical class and a new tool in resistance management

**Initium® displays no cross-resistance to fungicide classes of**

- phenylamides (e.g. metalaxyl)
- Qo inhibitors (e.g. strobilurins)
- carboxylic acid amides (e.g. dimethomorph)
- benzimidazoles, SDH inhibitors, triazoles and imidazoles

As a pro-active measure, **Initium** will be marketed only as ready mixes in combination with other fungicidal active ingredients of a different mode of action. The partners will complement the activity spectrum and deliver built-in resistance management for **Initium** and vice versa.

– **a new tool for resistance management**
Innovative complex III inhibitor of a new chemical class and a new tool in resistance management

The mode of action of Initium® – summary

- New proprietary chemical class: pyrimidylamines
- **Initium** inhibits respiration at complex III
- Exact binding site at complex III is not yet known
- No cross-resistance to important oomycete fungicide classes detected, including complex III Qo inhibitors
- Cross-resistance to Qil fungicides cyazofamid and amisulbrom cannot be excluded

Initium is the innovative complex III inhibitor of a new chemical class

MRL dossier submitted as an application for EU MRLs for all European uses developed up to now.

World-wide registration campaign for Initium products in progress.

First registration expected in 2010.