The Ohio State University
GRAPE DISEASE RESEARCH
Ohio Grape Wine Short Course
2005
Grape Disease Update
Mike Ellis
Midwest Small Fruit Pest Management Handbook

• The handbook has been revised and greatly improved.

• It has full color pictures of insects and diseases throughout the text.

• Every small fruit producer in the Midwest should have a copy.
Fungicide Resistance Development in Powdery Mildew
Fungicide Resistance to the Sterol-Inhibiting and Strobilurin Fungicides

• This is a real threat to their long term use for control of powdery mildew.
• There is some evidence to indicate that we are observing reduced sensitivity (resistance) developing in the sterol-inhibiting fungicides (Nova, Rubigan, Procure) and the strobilurin fungicides (Abound and Sovran).
We may want to consider combining the Strobilurin and Sterol-Inhibiting fungicides with sulfur or another material for powdery mildew control. Especially during the critical period for control of fruit Infection.
Most Critical Period For Controlling Grape Diseases With Fungicides

Immediate Pre-bloom
Through
3 to 4 weeks after bloom
This is the most critical period to prevent fruit infections by Black Rot, Powdery Mildew and Downy Mildew.
By 3 to 4 weeks after bloom, grape berries develop ontogenic resistance to:

- Black Rot
- Powdery Mildew
- Downy Mildew

Remember that Leaves and Rachises remain susceptible to Downy and Powdery Mildew
Fungicides For Control of Powdery Mildew
New Fungicides for Grape Disease Control

- Endura 70WG
- Quintec 2.08 SC
- Pristine 38WG
- Phosphorous Acid (AGRI-FOS, ProPhyt)
- Scala 6SC
Endura 70WG (Boscalid)

- Registered for control of powdery mildew at 5 oz per A. and for Botrytis bunch rot at 8 oz per A.
- No more than 5 applications per season
- No more than 3 sequential applications
- 14 day PHI and 12 hour REI
Pristine 38WG

- Combination of 2 active ingredients
  - pyraclostrobin (Cabrio)
  - and
  - boscalid (Endura)
- Pyraclostrobin is a strobilurin similar to Abound and Sovran
- Boscalid controls powdery mildew and Botrytis
Pristine 38WG

- Registered for control of Angular leaf spot, Anthracnose, Black Rot, Downy Mildew, Powdery Mildew, Phomopsis, and suppression of Botrytis

- Rate is 6 to 10.5 ounces / acre. For suppression of Botrytis, rate is 8 to 12.5 ounces

- Maximum of 6 applications per season, no more than 2 together

- 14 day PHI and 24 hour REI
Because Pristine is a mixture of a strobilurin (Cabrio) with Endura (boscalid) it should control strains of the powdery mildew fungus that are resistant to the strobilurins (Abound and Sovran) and the Sterol inhibiting fungicides (Nova, Elite, and Rubigan).
Pristine 38WG

Pristine cannot be applied to American grapes such as Concord.
Quintec 2.08 SC

- It has no activity against the other grape diseases
- It should be useful in fungicide resistance management programs for powdery mildew
- Strictly a protectant material. Has no effect on the fungus. Promotes resistance in the grape tissues
- Quintec is new fungicide chemistry with good to excellent activity against Powdery Mildew
Quintec 2.08 SC

- Use rate is 3 to 4 fluid ounces per acre

- 14 day preharvest interval and 12 hour REI
# Fungicides Currently Recommended For Powdery Mildew Control

<table>
<thead>
<tr>
<th>Protectants</th>
<th>Sterol-Inhibitors</th>
<th>Strobilurins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfur</td>
<td>Nova</td>
<td>Abound</td>
</tr>
<tr>
<td>Copper</td>
<td>Elite</td>
<td>Sovran</td>
</tr>
<tr>
<td>Fungicides</td>
<td>Rubigan</td>
<td>Flint</td>
</tr>
<tr>
<td>Quintec</td>
<td>Procure</td>
<td>Pristine</td>
</tr>
<tr>
<td>Endura</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JMS-Stylet Oil</td>
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<tr>
<td>Potassium Salts</td>
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</tr>
</tbody>
</table>
Potassium Salts For Powdery Mildew Control

**Potassium bicarbonate**

Armicarb 100, Kaligreen

Armicarb 100, 5lb bag = $39.60
At 3 to 5 lbs / A = $23.76 to $39.60 / A

**Monopotassium phosphate**

Nutrol, Ecspunge

50 lb bag = 85 cents / lb at 8 to 20 lb / A = $6.80 to $17 / A
Downy Mildew
# Fungicides Currently Recommended For Downy Mildew Control

<table>
<thead>
<tr>
<th>Protectants</th>
<th>Ridomil</th>
<th>Strobilurins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mancozeb</td>
<td>Ridomil Gold Copper</td>
<td>Abound</td>
</tr>
<tr>
<td>Captan</td>
<td>Ridomil Gold MZ</td>
<td>Sovran</td>
</tr>
<tr>
<td>Copper fungicides</td>
<td></td>
<td>Pristine</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Phosphorus Acid</td>
<td></td>
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</tbody>
</table>
Aliette WDG Fungicide

- Registered for use on grapes for control of Downy Mildew.
- Rate 3 to 5 lbs / A
- 21 day PHI
- Active Ingredient = Phosphorous Acid
Phosphorous Acid Fungicides

- Many are currently being marketed
- Same active ingredient as Aliette (phosphorous acid); however it is much less expensive.
- Two of the most common I am aware of are AGRI-FOS and ProPhyt
- 0 – day PHI and 4 hour REI
## Downy Mildew Fungicide Trial, 2003

<table>
<thead>
<tr>
<th>Product and Rate/A (100 gal)</th>
<th>Incidence</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agri-Fos 2.5 pts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>plus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur 90 W 6 lbs</td>
<td>3.7 b</td>
<td>3.4 b</td>
</tr>
<tr>
<td>ProPhyt 3 pts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>plus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur 90 W 6 lbs</td>
<td>4.2 b</td>
<td>4.1 b</td>
</tr>
<tr>
<td>Untreated Control</td>
<td>73.4 a</td>
<td>56.4 a</td>
</tr>
</tbody>
</table>

7 day schedule. July 16 – Sept 8
9 applications
Botrytis Bunch Rot (Gray Mold)
Scala SC Fungicide

- Registered for control of Botrytis Bunch Rot (Gray Mold).
- Same class of chemistry as Vangard.
- Very effective for Botrytis control.
- In choosing between Scala and Vangard, I would use the most cost effective.
- Use rate is 18 fl. oz./A alone or 9 fl.oz/A in a tank mix.
Fungicides Recommended for Botrytis Bunch Rot Control

- **Most Active**
  - Vangard
  - Scala
  - Rovral
  - Vangard plus Rovral
  - Elevate
  - Endura
  - Pristine

- **Suppression**
  - Abound
  - Sovran
  - Flint
That Concludes my Presentation

Thank You