Grape Protection Solutions

Grape Products Available

<table>
<thead>
<tr>
<th>Product</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrobat® 50WP</td>
<td>Fungicide</td>
</tr>
<tr>
<td>Cantus®</td>
<td>Fungicide</td>
</tr>
<tr>
<td>Frontier® Max</td>
<td>Herbicide</td>
</tr>
<tr>
<td>Kumulus® DF</td>
<td>Fungicide</td>
</tr>
<tr>
<td>Polyram® DF</td>
<td>Fungicide</td>
</tr>
<tr>
<td>Pristine®</td>
<td>Fungicide</td>
</tr>
<tr>
<td>Sovran®</td>
<td>Fungicide</td>
</tr>
<tr>
<td>Vivando™ SC</td>
<td>Fungicide</td>
</tr>
<tr>
<td>Zampro™</td>
<td>Fungicide</td>
</tr>
</tbody>
</table>
# Disease Solutions for Grapes

<table>
<thead>
<tr>
<th>Crop</th>
<th>Disease Name</th>
<th>Common</th>
<th>Scientific</th>
<th>Product</th>
<th>Active Ingredient</th>
<th>Fungicide Group</th>
<th>PHI (days)</th>
<th>REI</th>
<th>Rainfast</th>
<th>Rate (kg or L/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grapes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthracnose</td>
<td>Elsinoe ampelina</td>
<td></td>
<td></td>
<td>Pristine</td>
<td>boscalid, pyraclostrobin</td>
<td>7 &amp; 11</td>
<td>14</td>
<td></td>
<td></td>
<td>0.735</td>
</tr>
<tr>
<td>Black rot</td>
<td>Guignardia bidwellii</td>
<td></td>
<td></td>
<td>Pristine</td>
<td>boscalid, pyraclostrobin</td>
<td>7 &amp; 11</td>
<td>14</td>
<td></td>
<td></td>
<td>0.735</td>
</tr>
<tr>
<td></td>
<td>Sovran</td>
<td></td>
<td></td>
<td>Pristine</td>
<td>kresoxim-methyl</td>
<td>11</td>
<td>14</td>
<td></td>
<td></td>
<td>0.240</td>
</tr>
<tr>
<td></td>
<td>Polyram DF</td>
<td></td>
<td></td>
<td>Metiram</td>
<td>M&lt;sup&gt;2&lt;/sup&gt;</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td>2 / 1000 L</td>
</tr>
<tr>
<td>Botrytis grey mould</td>
<td>Botrytis cinerea</td>
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<td></td>
<td>Pristine</td>
<td>boscalid, pyraclostrobin</td>
<td>7 &amp; 11</td>
<td>14</td>
<td></td>
<td></td>
<td>0.420 - 0.735</td>
</tr>
<tr>
<td>Bunch rot complex</td>
<td>Cladosporium spp.,</td>
<td></td>
<td></td>
<td>Pristine</td>
<td>boscalid, pyraclostrobin</td>
<td>7 &amp; 11</td>
<td>14</td>
<td></td>
<td></td>
<td>0.420 - 0.735</td>
</tr>
<tr>
<td></td>
<td>Aspergillus spp.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Downy midew</td>
<td>Plasmopara viticola</td>
<td></td>
<td></td>
<td>Acrobat 50WP</td>
<td>dimethomorph</td>
<td>40</td>
<td>14</td>
<td></td>
<td></td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>Polyram DF</td>
<td></td>
<td></td>
<td>Metiram</td>
<td>M&lt;sup&gt;2&lt;/sup&gt;</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td>2 / 1000 L</td>
</tr>
<tr>
<td></td>
<td>Pristine</td>
<td></td>
<td></td>
<td>Boscalid</td>
<td>pyraclostrobin</td>
<td>7 &amp; 11</td>
<td>14</td>
<td></td>
<td></td>
<td>0.675 - 0.735</td>
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<tr>
<td></td>
<td>Sovran</td>
<td></td>
<td></td>
<td>Kresoxim-methyl</td>
<td>11</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td>0.240 - 0.300</td>
</tr>
<tr>
<td></td>
<td>Zampro</td>
<td></td>
<td></td>
<td>Ametoctradin,</td>
<td>40 &amp; 45</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td>0.8 - 1.0</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dimethomorph</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grape erineum mite</td>
<td>Colomeorus vitis</td>
<td></td>
<td></td>
<td>Kumulus DF</td>
<td>Sulphur</td>
<td>M</td>
<td>1 - 21</td>
<td>24 hrs</td>
<td></td>
<td>3.40</td>
</tr>
<tr>
<td>Powdery mildew</td>
<td>Uncinula necator</td>
<td></td>
<td></td>
<td>Cantus</td>
<td>Boscalid</td>
<td>7</td>
<td>14</td>
<td></td>
<td>12 hrs</td>
<td>0.315</td>
</tr>
<tr>
<td></td>
<td>Kumulus</td>
<td></td>
<td></td>
<td>Sulphur</td>
<td>M</td>
<td>1 - 21</td>
<td>24 hrs</td>
<td></td>
<td></td>
<td>12.60</td>
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<tr>
<td></td>
<td>Pristine</td>
<td></td>
<td></td>
<td>Boscalid</td>
<td>Pyraclostrobin</td>
<td>7 &amp; 11</td>
<td>14</td>
<td></td>
<td></td>
<td>0.420 - 0.735</td>
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<tr>
<td></td>
<td>Sovran</td>
<td></td>
<td></td>
<td>Kresoxim-methyl</td>
<td>11</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td>0.240 - 0.300</td>
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<tr>
<td></td>
<td>Vivando SC</td>
<td></td>
<td></td>
<td>Metrafenone</td>
<td>U8</td>
<td>14</td>
<td></td>
<td>12 hrs</td>
<td>4 days</td>
<td>0.750</td>
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</table>

Always read and follow label directions.
# Weed Solutions for Grapes

<table>
<thead>
<tr>
<th>Crop</th>
<th>Weed</th>
<th>Product</th>
<th>Active Ingredient</th>
<th>Herbicide Group</th>
<th>PHI (days)</th>
<th>REI</th>
<th>Rainfast</th>
<th>Rate (kg or L/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grapes</td>
<td>Annual broadleaf</td>
<td>Eastern black nightshade</td>
<td>Frontier Max (non-bearing vines)</td>
<td>dimethenamid-P</td>
<td>15</td>
<td>1 - 2 years</td>
<td>24 hrs</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Annual grass</td>
<td>Barnyard grass</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crabgrass (smooth, large)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fall panicum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foxtail (green, yellow, giant)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sedge</td>
<td>Old witchgrass</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nutsedge (yellow)</td>
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<td></td>
</tr>
</tbody>
</table>
Disease Solution Products for Grapes

**Acrobat® 50WP**

Fungicide

- Effective, proven Downy mildew control
- Highly systemic
- Rapidly rainfast
- Anti-sporulant

**Rate:** 450 g/ha (180 g/ac)

**Timing:** Acrobat must be applied preventatively in combination with a second mode of action effective on Downy mildew on a 7-day schedule. Do not apply more than 2 sequential applications of Acrobat before rotating to a non-Group 40 fungicide.

**Formulation:** Wettable powder

**Packaging:** 1 case consists of 8 x 1.81 kg jugs

**Coverage:** 1 jug treats 4 ha (10 ac)

**Performance**

![Diagram of disease cycle with inhibited stages indicated by X]

Developmental stages that are inhibited by dimethomorph are indicated (X).

**Cantus®**

Fungicide

- Effective, proven Powdery mildew control
- Systemic & rapidly rainfast
- Helps you maximize your marketable yield

**Rate:** 315 g/ha (127 g/ac)

**Timing:** Apply preventatively on a 7-day schedule for Powdery mildew. Do not apply more than 1 application before alternating with a non-Group 7 fungicide.

**Formulation:** Wettable granule

**Packaging:** 1 case consists of 4 x 2.83 kg jugs

**Coverage:** 1 jug treats 9 ha (22.2 ac)

**Performance**

![Graph showing % Control of Powdery Mildew]

Source: BASF and University trials (1997 - 2000)

Always read and follow label directions.
Kumulus DF
Fungicide

- Proven, effective control of Powdery mildew
- Patented low-dust sulphur formulation
- Rapidly disperses and stays in suspension

**Performance**

**Rate:** 3.4 - 12.6 kg/ha (1.4 - 5.1 kg/ac)

**Timing:** Apply preventatively on a 10-day schedule for Powdery mildew or at pre-bloom for Grape erineum mite. Do NOT apply to Concord, Foch, de Chaunac or Van Buren varieties. Do NOT apply if temperatures over 25°C with high humidity are expected within 3 days of an application. Do NOT apply if frost is expected. Do NOT apply during flowering. Do NOT use within 30 days of an oil spray.

**Formulation:** Water dispersible granule

**Packaging:** 25 kg bag

**Coverage:** 1 bag treats 2 - 7.35 ha (4.9 - 18.2 ac)

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Kumulus DF rapidly disperses in water and stays in suspension, ensuring that all the Kumulus DF put in the spray tank reaches your crop.

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Polyram DF
Fungicide

- Proven protection against Downy mildew and Black rot
- Unique hollow granule formulation
- Mixes easily and stays in suspension
- Contains 14% zinc

**Performance**

**Rate:** 2 kg / 1000 L water

**Timing:** Apply 2 kg/ha pre-bloom, post-bloom and first covers for Downy mildew. Maximum 3 applications per season.

**Formulation:** Water dispersible granule

**Packaging:** 20 kg bag

**Coverage:** 1 bag treats 10 ha (25 ac) when applying in 1000 L water/ha
Pristine
Fungicide

- Broad-spectrum control of many key diseases
- Locally systemic & rainfast
- Two different modes of action for resistance management
- **AgCelence** - which may improve stress tolerance and increase yield

**Rate:** 0.420 - 0.735 kg/ha (0.17 - 0.297 kg/ac)

**Timing:** Apply Pristine preventatively as part of a 7-10 day rotation. Key application windows are bloom, bunch closure or veraison. Do not apply more than 2 sequential applications before alternating with a non Group 7 or 11 fungicide. Not for use on table grapes, Concord or Fredonia.

**Formulation:** Wettable granule

**Packaging:** 1 case consists of 4 x 2.83 kg jugs

**Coverage:** 1 jug treats 3.8 - 6.7 ha (9.5 - 16.6 ha)

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Sovran
Fungicide

- Broad-spectrum disease control with one rate
- Rapidly rainfast
- Unique Surface Systemic Activity™ insures excellent coverage of developing fruit.

**Rate:** 240 - 300 g/ha (97 - 121 g/acre)

**Timing:** Apply preventatively pre- through post-bloom when conditions favour Powdery mildew. During periods of rapid growth and heavy disease pressure, shorten the spray intervals. Alternate or tank-mix Sovran with a non-Group 11 fungicide.

**Formulation:** Water dispersible granule

**Packaging:** 1 case consists of 10 x 500 g jugs

**Coverage:** 1 jug treats 1.67 - 2.08 ha (4.1 - 5.2 ac)

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Always read and follow label directions.
**Vivando™**
Fungicide

- New, unique mode of action
- Locally systemic & vapour activity
- Wide application window
- Rainfast and persistent
- Low impact on beneficials

**Rate:** 0.75 L/ha (300 mL/ac)

**Timing:** Apply preventatively for Powdery mildew on a 14-21 day schedule. During periods of rapid growth and heavy disease pressure, shorten the spray intervals. Do not apply more than 2 applications before alternating with a different mode of action.

**Formulation:** Suspension concentrate

**Packaging:** 1 case consists of 4 x 3.785 L jugs

**Coverage:** 1 jug treats 5 ha (12.5 ac)

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**Zampro™ 50WP**
Fungicide

- Unique, dual mode of action
- Recharges with moisture
- Liquid formulation for easy handling

**Rate:** 0.8 - 1.0 L/ha (0.32 - 0.4 L/ac)

**Timing:** Apply Zampro preventatively on a 7-10 day schedule for Downy mildew. Addition of a penetrating surfactant at 0.125% may improve performance. Alternate Zampro with non-Group 40 or 45 fungicides.

**Formulation:** Liquid

**Packaging:** 1 case consists of 4 x 4.41 L jugs

**Coverage:** 1 jug treats 4.4 - 5.5 ha (10.9 - 13.6 ac)
Weed Solution Products for Grapes

**Frontier Max**
Herbicide

- Season-long preemergent residual control
- Annual grasses and key broadleaf weeds
- Low use rate

**Rate:** 963 mL/ha (390 mL/ac)

**Timing:** Apply preemergent before weeds appear under non-bearing vines.

**Formulation:** Emulsifiable Concentrate

**Packaging:** 1 case consists of 2 x 9 L jugs

**Coverage:** 1 jug treats 9.3 ha (23.1 ac)

**Performance**

Lateral distribution in soil

String Test (conducted by BASF Biology)
- String soaked in solution representing normal use rate of products
- No overhead watering - sub-surface irrigation

*Competitor* 6.3 cm lateral distribution

*Frontier Max* 14.5 cm lateral distribution

Always read and follow label directions.