Early Season
Blueberry Disease Control

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Exobasidium Fruit and Leaf Spot

*Exobasidium maculosum*

Causes green spots on berries and light green spots on leaves

Photos courtesy of Eddie McGriff, University of Georgia, and David Ingram, Mississippi State University
Disease occurs sporadically but can cause significant yield loss.

Most severe in areas of poor air circulation, where overgrown, dense bushes and surrounding vegetation trap humid air.

Prune to a more open canopy and improve water drainage.

Remove surrounding vegetation especially wild blueberries that might be infected.
Recent field trials in Georgia have shown that Exobasidium can be controlled effectively with a single late-dormant application of lime sulfur, thus providing blueberry producers with a simple and inexpensive means of managing the disease.

Other fungicides (Captan and Indar) applied in-season were also effective when applied in multiple sprays from bloom through early cover sprays.

Pristine was ineffective in most trials, indicating that the pathogen is insensitive to this product.

Pristine might still be effective in fields in MS where it has not been routinely sprayed for several years.
Exobasidium Fruit and Leaf Spot

Chemical Control

<table>
<thead>
<tr>
<th>Product</th>
<th>Amount per Acre</th>
<th>REI hrs</th>
<th>PHI days</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lime sulfur</td>
<td>5 gallons in 50-70 gallons of total spray volume</td>
<td>48</td>
<td>0</td>
<td>Apply 1-2 weeks before leaf or flower buds begin to break. Do not use within 14 days of an oil spray or when temperatures are above 85°F. Burning of foliage may occur during periods of warm temperatures. Sulforix is NOT approved for organic use.</td>
</tr>
<tr>
<td>Sulforix (Calcium polysulfide)</td>
<td>1 to 2 gallons in 100-150 gallons of total spray volume</td>
<td>48</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Exobasidium is not specifically on the label of the recommended fungicides. However, when applied for other diseases, suppression of Exobasidium has been observed.

Adapted from the 2015 Southeast Regional Blueberry Integrated Management Guide

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Blueberry Diseases

Mummy Berry

Causes stem and flower blight and dry fruit rot

Shoot blight

Fruit Rot
Mummy Berry Shoot Blight

Fungus overwinters in dried up infected blueberry on ground. In the spring a mushroom grows out of mummy and shoots spores up to leaves.
Mummy Berry Shoot Blight

First symptom in early spring: Infection of leaf shoot - “Strike”
Mummy Berry
Infected Fruit

Infected berries turn cream to pink usually drop just before start of harvest. White fungal growth visible inside berry.
Spray **Indar** beginning at green tip of leaf buds or when 1 to 5% of open bloom are at stage 6, whichever comes first.

Continue sprays till all blooms have fallen.
Indar alone will increase some fruit rots

Application of Captan or Indar + Captan as a tank mix during bloom should alleviate this problem.
**Mummy Berry**

**Chemical Control**

**Indar** - *FRAC 3* – Limited to 4 applications, then a fungicide in another FRAC group must be used. Choices include:

**Pristine** - *FRAC 11 + 7* - Very effective against Botrytis blight and fruit rots

**Captan** - *FRAC M4* – *May be tank mixed or rotated*
Botrytis Blossom Blight

Infection of flowers often follows light freeze damage.
Infection may move into stem and kill terminal 3 inches.
Botrytis Blossom Blight

Chemical Control

Apply fungicides immediately following a light freeze to prevent Botrytis infection

Several excellent fungicides are registered for Botrytis control on blueberry

- **Pristine** - \( \text{FRAC } 11 + 7 \)
- **Switch** - \( \text{FRAC } 9 + 12 \)
- **Elevate** - \( \text{FRAC } 17 \)
- **CaptEvate** - \( \text{FRAC M4 } +17 \)

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Blueberry Diseases
Fruit Rots

Ripe Rot
*Colletotrichum* spp

Alternaria Fruit Rot
*Alternaria* spp
Phomopsis Twig Blight and Fruit Rot

Twig blight injury similar to Botrytis blight. Serious on rabbiteye cultivars. Fruit rot causes about 5% berry loss in NC. Controlled by fungicides.
Fruit Diseases

Chemical Control

Several excellent fungicides are registered for Fruit Rot control on blueberry

- **Abound** – FRAC 11
- **Switch** – FRAC 9 + 12
- **Pristine** – FRAC 11 + 7

Alternaria Fruit Rot  |  Ripe Rot  |  Phomopsis Fruit Rot
Exobasidium, Mummy Berry, and Fruit Rots  
(Phil Brannen, UGA Blueberry Blog, 10/31, 2013)

Apply *lime sulfur* as a late dormant spray (about 1-2 weeks prior to bud break) for Exobasidium and Phomopsis control

Apply *Indar + Captan* from green tip through petal fall for mummy berry management

Apply *Captan* for at least two cover sprays for fruit rot control
<table>
<thead>
<tr>
<th>Fungicide Trade Name</th>
<th>Chemical Name [FRAC]</th>
<th>Exobasodium Leaf &amp; Fruit Spot</th>
<th>Mummy Berry</th>
<th>Botrytis Blight</th>
<th>Alternaria Fruit Rot</th>
<th>Phomopsis Fruit Rot</th>
<th>Ripe Rot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lime sulfur</td>
<td></td>
<td>++-----</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Sulforix - Calcium</td>
<td>Calcium polysulfide [M]</td>
<td>++-----</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Captan, Captec</td>
<td>captan [M4]</td>
<td>++-----</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>Indar*</td>
<td>fenbuconazole [3]</td>
<td>++++ w/Captan</td>
<td>++++</td>
<td>NA</td>
<td>NA</td>
<td>++++</td>
<td>NA</td>
</tr>
<tr>
<td>Pristine - pyraclostrobin</td>
<td>+ bosalid [11+7]</td>
<td>++</td>
<td>+++</td>
<td>++++</td>
<td>++++</td>
<td>+++</td>
<td>++++</td>
</tr>
<tr>
<td>Quash</td>
<td>metconazole [3]</td>
<td>NA</td>
<td>+++</td>
<td>NA</td>
<td>NA</td>
<td>++++</td>
<td>NA</td>
</tr>
<tr>
<td>Quilt Xcel - azoxystrobin</td>
<td>+ propiconazole [11+3]</td>
<td>NA</td>
<td>+++</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Orbit, Tilt, Bumper</td>
<td>propiconazole [3]</td>
<td>NA</td>
<td>+++</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Proline</td>
<td>prothioconazole [3]</td>
<td>NA</td>
<td>+++</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

NA = Not applicable or Not tested

*Tank mix Indar with captan products during bloom to prevent rots

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# Efficacy of selected fungicides against early season blueberry diseases

<table>
<thead>
<tr>
<th>Fungicide Trade Name Chemical Name [MOA]</th>
<th>Exobasodium Leaf &amp; Fruit Spot</th>
<th>Mummy Berry</th>
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<th>Phomopsis Fruit Rot</th>
<th>Ripe Rot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch cyprodinil + fludioxonil [9+12]</td>
<td>NA</td>
<td>++</td>
<td>+++++</td>
<td>++++</td>
<td>+++</td>
<td>+++++</td>
</tr>
<tr>
<td>Elevate fenhexamid [17]</td>
<td>NA</td>
<td>++</td>
<td>+++++</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>CaptEvate fenhexamid + captan [17+M4]</td>
<td>NA</td>
<td>++</td>
<td>+++++</td>
<td>++</td>
<td>++</td>
<td>+++</td>
</tr>
<tr>
<td>Omega 500F fluazinam [M29]</td>
<td>NA</td>
<td>NA</td>
<td>++</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Ziram Ziram [M3]</td>
<td>NA</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td>+++</td>
<td>+++</td>
</tr>
</tbody>
</table>

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