Using All the Tools in the Pink Rot Management Tool Box

Jeff Miller
Pink Rot

*Phytophthora erythroseptica*
Pink rot

Pythium leak

Combinations of the two
Missing tools make it hard to get the job done.
Pink Rot Management

1. Field selection/crop rotation
2. Adjust soil pH by lime application in low pH soils
3. Plant less susceptible varieties
4. Proper irrigation management
5. Use appropriate fungicides
6. Avoid “disease-favorable” conditions at harvest
7. Apply post-harvest fungicides
8. Reduce tuber pulp temperatures to 55 F or lower
9. Grade out infected tubers going into storage
2. Adjust soil pH by lime applications in low pH soils

From Benson et al., 2009, Am. J. Potato Res. 86:472-475
and Benson et al., 2009, Am. J. Potato Res. 86:466-471
3. Plant less susceptible varieties

- Ivory Crisp
- Norkotah
- Shepody

Test conducted 2002 in Rexburg, ID with natural infection.
4. Proper Irrigation Management

Irrigating more frequently with less water decreases pink rot pressure.

Test conducted 2010 in Minidoka, ID with natural infection.
5. Use Appropriate Fungicides

Two Analogies:
## Effect of Fungicide Programs on Pink Rot, 2010

<table>
<thead>
<tr>
<th></th>
<th>May 4 In-furrow</th>
<th>July 5 Dime-size (DS)</th>
<th>July 19 DS + 14 days</th>
<th>Aug 2 DS + 28 days</th>
<th>Aug 16 DS + 42 days</th>
</tr>
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<tbody>
<tr>
<td>(Untreated check)</td>
<td></td>
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<tr>
<td>Ridomil Gold</td>
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<tr>
<td>Ridomil Gold Cu, 2lb</td>
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<tr>
<td>MetaStar, 12.8 fl oz</td>
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<tr>
<td>Crop-phite, 10 pt</td>
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<tr>
<td>Crop-phite, 7.5 pt</td>
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</table>

**Mixed population (mefenoxam sensitive and resistant)**

- Untreated check: a
- Ridomil Gold: bcd
- Ridomil Gold Cu, 2lb: bc
- MetaStar, 12.8 fl oz: ab
- Crop-phite, 10 pt: cd
- Crop-phite, 7.5 pt: d
Effect of Phosphite Rate and Timing on Pink Rot
Russet Norkotah, natural infection, Minidoka, ID, 2008

![Bar graph showing the effect of phosphite rate and timing on pink rot.]

- **Untreated**
- **Phostrol (10)**
  - 3 applications
  - Dime-size tubers, +14 days, +14 days
- **Phostrol (5)**
  - 6 applications
  - Dime-size tubers, Every 7 days
- **Phostrol (5)**
  - 5 applications
  - Dime-size tubers, Every 14 days

Legend:
- a
- b
- c
- bc

Note: The graph compares the percentage of pink rot tubers across different treatment groups.
Effect of Fungicide Timing on Pink Rot

On time = June 21, July 3
Rescue = July 30, August 6, August 13

On time = June 26, July 9
Rescue = July 30, August 6, August 13

All treatments significantly similar
**Effect of Irrigation Frequency on Pink Rot**

Same amount of water applied each week. Difference was frequency of irrigation.

Fungicides may not save you from the effects of improper irrigation.
Pink Rot Fungicide Trial, 2017

% Pink Rot Tubers

Check 1: a
Orondis Gold (10.8): cde
Ridomil Gold Bravo (2.5): cd
Ranman: b
5. Use Appropriate Fungicides

- Mefenoxam/metalaxyl
  - Ridomil Gold products
  - Ultra Flourish
  - MetaStar
- Phosphorous acid
  - Phostrol
  - Resist 57
  - Phiticide
  - Others
- Oxathiapiproline + Mefenoxam (in-furrow only)
  - Orondis Gold
- Cyazofamid
  - Ranman
6. Avoid Disease Favorable Conditions at Harvest

Wounding increases likelihood of disease.
Warmer pulp temperatures increase likelihood of disease.
7. Apply Post-Harvest Fungicides

• Phosphorous acid:
  – 12.8 fl oz/ton tubers
  – Apply in 0.5 gal water/ton tubers
7. Apply Post-Harvest Fungicides
Disinfect vs. Disinfest
Effect of Post-Harvest Applications on Pink Rot
1-Ton Bin Trial

Incidence

UTC | HPPA 1:25 | PA (3.2) | PA (6.4) | PA (12.8)

Dilution rate
Product rate in fl oz/ton

UTC: 60
HPPA 1:25: 80
PA (3.2): 40
PA (6.4): 20
PA (12.8): 10
Effect of Post-inoculation Interval on Incidence of Pink Rot

Incidence of Pink Rot as a function of post-inoculation interval. The graph shows the incidence of Pink Rot over different post-inoculation intervals for untreated plants and those treated with HPPA and PA. The incidence is measured on the y-axis, ranging from 0 to 100, while the post-inoculation interval is on the x-axis, ranging from 0 to 6 hours.
8. Reduce Tuber Pulp Temperatures in Storage

- Operate fans and humidity as soon as the first duct is covered.

- Reduce tuber pulp temperatures to 55° F in a stair step manner, setting temps 2° cooler than your coolest tubers.

- During the ramping period, ensure the temperature differential between the top and bottom of the pile is 0.5-2° F.

Nora Olsen, University of Idaho
9. Grade Out Infected Tubers Prior to Storage
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Citations and Additional Information


Post-harvest spray application volumes

- Dry and 0.25 gal/T
- Dry and 0.50 gal/T
- Dry and 1.0 gal/T
- Dry and 2.0 gal/T
Effect of Wounding/Temperature on Pythium Leak

- % tuber infected

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<thead>
<tr>
<th></th>
<th>Wounded</th>
<th>Non-wounded</th>
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<tbody>
<tr>
<td>60</td>
<td>80</td>
<td>60</td>
</tr>
<tr>
<td>70</td>
<td>100</td>
<td>70</td>
</tr>
</tbody>
</table>

Legend: 60, 70