Cherry leaf spot: 2008 field trial results

Northwest MI Orchard & Vineyard Show
January 21, 2009
**Review of Cherry Leaf Spot Biology**

**Ascospore discharge:**

* Ascospores released by wetting (petal fall + 4-6 weeks)
* > 61 F, maximum discharge
* 50’s F, reduced discharge
* 39-46 F, minimal discharge

Cherry leaf spot disease cycle.
Cherry Leaf Spot -- Life Cycle

**Infection conditions:**

* Optimal at ~ 61-70°F (as little as 5-6 hr wetting for light infection)
* With < 24 hr wetting, can see heavy infection at temps of 57-72 °F
Early infection:
Uneven fruit ripening
Epidemic risk -- extreme premature defoliation
Early defoliation:
• Reduced photosynthate storage in roots
• Increased susceptibility to winter injury
• Decreased fruit set in following season
Fungal Disease Epidemics

Graph showing % Disease over Date. There is a significant increase in disease from Harvest to Sept. Oct.

Fungal Disease Epidemics

% Disease

Date


Harvest

% Disease vs Date graph showing an increase in disease from harvest through September and October.
Cherry Leaf Spot Fungicides (2008)

- Bravo
- SI; SI + Captan
- Gem (strobilurin) *
- Pristine (boscalid + strobilurin) *
- Adament (Elite + Gem) *
- Syllit (dodine) + Captan *

- 8 experimental fungicide compounds
Fungal Disease Control Chemistries, Tested in 2008

- Chlorothalonil
- Sterol-inhibitors
- Strobilurins
- Boscalid
- Syllit
- Captan
- DPX-LEM17 -- brown rot, mildew
- USF2016A -- leaf spot, brown rot, mildew
- USF2017A -- leaf spot, brown rot, mildew
- A8122 -- leaf spot, brown rot, mildew
- A16001 -- leaf spot, brown rot, mildew
- A13703 -- leaf spot, brown rot, mildew
- A15909 -- leaf spot, brown rot, mildew
- Inspire -- leaf spot, brown rot, mildew
Cherry Disease Control
Experimental Trials

• Trials run at NWMHRS
  – Bill Klein, Myron Anderson
• Block of Montmorency & Balaton
• 20 treatments
• Petal fall, shuck split, 1st - 4th covers
• Ratings at harvest, end of August
Leaf Spot Control Programs

July 25 rating
August 21 rating

% Leaf Spot Infection

Control

47% defoliation on Aug. 21
Leaf Spot Control Programs

% Leaf Spot Infection

Bravo (3 lb) PF, SS
Adament (4 oz) 1st, 4th
Syllit (27 fl oz) + Captan (3 lb)
2nd, 3rd

Bravo (3 lb) PF, SS
Pristine (10.5 oz) 1st, 4th
Syllit (27 fl oz) + Captan (3 lb)
2nd, 3rd

Control

August 21 rating
July 25 rating

2% defoliation on Aug. 21
47% defoliation on Aug. 21
Leaf Spot Control Programs

- July 25 rating
- August 21 rating

- % Leaf Spot Infection

- Bravo (3 lb) PF, SS
- Adament (4 oz) 1st -- 4th

* 5% defoliation on Aug. 21
47% defoliation on Aug. 21
# Cherry Leaf Spot Control, 2008
## SI resistance effect

<table>
<thead>
<tr>
<th></th>
<th>% Infection</th>
<th>% Defoliation</th>
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<tbody>
<tr>
<td></td>
<td>25 Jul</td>
<td>21 Aug</td>
<td>21 Aug</td>
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<tr>
<td>Elite 45WP, 6 oz</td>
<td>5.3 b</td>
<td>74.2 b</td>
<td>13.0 b</td>
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<tr>
<td>Elite 45WP, 6 oz +</td>
<td>0.3 c</td>
<td>4.6 c</td>
<td>2.6 c</td>
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<tr>
<td>Captan 50WP, 3 lb</td>
<td>38.8 a</td>
<td>97.4 a</td>
<td>47.2 a</td>
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</tbody>
</table>
Leaf Spot Control
Full Season Experimental Treatments

% Leaf Spot Infection

Elite, 6 oz
Elite (6 oz) + Captan (3 lb)
USF2016 (3 oz)
USF2016 (5 oz)
USF2017 (6 oz)
USF2017 (8 oz)
Control

July 25 rating
August 21 rating
Leaf Spot Control
Full Season Experimental Treatments

% Leaf Spot Infection

Inspire, 7 fl oz
A8122 (7 fl oz)
A16001 (20 fl oz)
A13703 (10 fl oz)
A15909 (14 fl oz)
Control

August 21 rating
July 25 rating
Brown Rot Control

Control

A15909

% Brown Rot

0  5  10  15  20  25  30  35
Powdery Mildew Control

- Control
- Syllit (FS)
- USF2016 (FS)
- Elite + Captan (FS)
- Elite (FS)
- Bravo (1 -- 4)
- Adament (1 -- 4)
- Adament (1,4); Syllit (2,3)

% Mildew
Leaf Spot Control With Reduced Rates of Copper
Chemistries for Cherry Leaf Spot Control, 2009

• Chlorothalonil -- petal fall, shuck split
  – Broad-spectrum fungicide
  – Postharvest if necessary
  – Poor mildew activity

• Pristine -- boscalid and strobilurin
  – Boscalid component effective against CLS
  – Excellent leaf spot, mildew material
  – Very good brown rot material
Chemistries for Cherry Leaf Spot Control, 2009

- **Adament -- strobilurin + SI**
  - Very good to excellent leaf spot, mildew material
  - Good brown rot material

- **Gem -- strobilurin**
  - Excellent leaf spot material
  - Weak mildew material, not a brown rot fungicide

- **Syllit + Captan**
  - Excellent leaf spot material
  - Weak mildew material, not a brown rot fungicide

- **Copper -- Kocide, copper sulfate, C-O-C-S**
  - Excellent leaf spot material
  - ?? mildew material, not a brown rot fungicide
  - Phytotoxicity potential
Chemistries for Cherry Leaf Spot Control, 2009

- Chlorothalonil
- Pristine
- Adament, Gem
- Syllit + Captan
- Copper
Optimal Timings for Cover Spray Options

• 1st Cover
  – Pristine or Gem
    • additional powdery mildew control

• 2nd, 3rd Cover
  – Coppers, Syllit + Captan
  – Pristine or Gem

• 4th Cover
  – SI + Captan
    • additional brown rot control
  – Coppers, Syllit + Captan
  – Pristine or Gem
News and Notes; Cherry Disease Control

- Brown rot -- inoculated trial
- Brown rot -- survey to assess sensitivity to SI’s
- Coppers -- conditions relevant for phytotoxicity
- Syllit + Captan -- excellent for cls control; less effective for mildew
- New materials, modes of action
- European brown rot on Balaton -- trial planned for 2009
Fungicide Chemistries at Risk for Resistance Development

- **Sterol Inhibitors**
  - Elite, Indar, Nova, Rubigan
- **Strobilurins**
  - Gem (Flint)
- **Boscalid**
  - Pristine (also contains a strobilurin)
- **Dodine**
  - Syllit