Disease update: Controlling American brown rot and what’s new in cherry leaf spot?

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American brown rot

Major fruit rot disease on sweet cherry
Can be significant issue on tart cherry

Significant secondary sporulation
Environmental conditions favoring American brown rot

- Prefers ripening cherries
  - Needs wounds to infect green cherries
- Warm, wet humid weather
- 18 hr wetness at 50 F; 5 hr wetness at 77 F to initiate infection
- Infection is slower above 80 and below 55 F
- Mature fruit can decay in 2 days under optimum conditions
American brown rot disease control

- Indar 2F – we’ve relied on this sterol inhibitor (SI) fungicide for ABR control for decades

- Sterol inhibitor fungicides – effects on fungus are quantitative
  - Examine by testing fungal relative growth (RG)
As Fungicide Concentration Increases

Relative Growth Decreases
Relative Growth: $RG = 0$

- **Propiconazole** (Orbit)
- **Fenbuconazole** (Indar)
RG = 10%

Control

Propiconazole (Orbit)

Fenbuconazole (Indar)
RG = 45%
American brown rot orchard surveys – RG on SIs

• Sundin lab has surveyed ~ 1,500 isolates of ABR fungus (2009-2013)

• Distribution of RG’s:
  • 0-30%   ---   24.6%
  • 31-70%   ---   70.6%
  • > 70%   ---   4.8%

• Orchard means ~ 40-47%
American brown rot Indar evaluation on peach
American brown rot Indar evaluation on peach

- ABR fungicide assays on peach fruit
- Protective or curative fungicide treatment

- Protective:
  - spray fruit with fungicide solution
    - Indar 2F @ 6 fl oz / A
  - 1 day later wound and inoculate with ABR
    - Isolates with varying RG (0% to 74%)
  - monitor lesion size daily
American brown rot Indar evaluation on peach

• ABR fungicide assays on peach fruit
• Protective or curative fungicide treatment

• Curative:
  – wound and inoculate fruit with ABR
  – 1 day later spray with fungicide solution
  – monitor lesion size daily
No fungicide treatment
Indar 2F (6 fl oz/A treatment)
Indar 2F (12 fl oz/A treatment)
Curative SI studies

• Everything looked bad, even more sensitive isolates

• With the shifting to reduced sensitivity of the ABR isolates, treating them after infection with Indar is impossible
American brown rot SI studies

• RG distribution:
  • 0-30% --- 24.6%
  • 31-70% --- 70.6%
  • > 70% --- 4.8%

• >70% RG – definitely resistant, even 12 fl oz / A rate not effective

• Most of ABR population is shifted
  – Orchard means ~ 40-47%
American brown rot control strategies, 2014 and beyond

• When using Indar, high rates are important, *spray window must be shortened*
  – 4-5 days depending on weather conditions
  – Protective applications are essential
  – Great coverage is essential

• Add Captan for resistance management
  – 2.5 lbs/A Captan 80 WDG
American brown rot control strategies, 2014 and beyond

• Mix in the new SDHIs Luna Sensation or Merivon

• Bracket or alternate SDHIs with Indar
  – SDHI, Indar, Indar, SDHI or
  – Indar, SDHI, Indar, SDHI

• Add Captan for resistance management
  – 2.5 lbs/A Captan 80 WDG
American brown rot control
take-home message

• We can’t continue to rely on Indar
• Targeting a window ~ 2 weeks before harvest
• Spray every 4-5 days if weather indicates
• Indar (12 fl oz/A) + Captan
• Luna Sensation or Merivon + Captan

• Need great coverage!
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 -- Life Cycle

1. Secondary spores >>>>>> Primary spores
Cherry Leaf Spot -- Life Cycle

1. Secondary spores >>>>>> Primary spores
2. Secondary spores are already in the tree
Cherry Leaf Spot Management

Objectives

1. Control primary infection before harvest
2. Control primary infection before harvest
3. Control primary infection before harvest
4. Control primary infection before harvest
Once leaf infection occurs – even marginal infection periods become significant.
Cherry leaf spot fungicides

• New SDHIs
  – Luna Sensation (SDHI + Gem)
  – Merivon (SDHI + pyraclostrobin)

• Syllit + Captan

• Coppers
  – 1.2 lbs metallic Cu per acre

• Extended window for Bravo

• Captan

• Gem
News and Notes; Cherry Leaf Spot Control

• New SDHIs – Merivon and Luna Sensation
  – Captan should be added for resistance management

• Use high rates of these materials
  – essential for long-term protection from resistance
  – Merivon – at least 5.5 fl oz/A
  – Luna Sensation – (5 to 5.8 fl oz/A)

• Best powdery mildew fungicides

• VG to E for American brown rot
News and Notes; Cherry Leaf Spot Control

• Extended window for Bravo
  – Excellent leaf spot fungicide

• Remember: Bravo is a protectant
  – Surface associated, not systemic
  – Needs a reduced spray interval compared to new SDHIs or Syllit
  – 1st cover timing critical for mildew control, use Luna Sensation or Merivon
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