

# **G.S. Long Co.**

## **Hood River – Grower meeting**

1/09/14

# Topics

- Merivon fungicide
- Pristine pre-harvest applications in pome fruit
- Apogee cherry label and brief data summary
- Vivando fungicide label expansion

# Merivon™ fungicide

**merivon™**  
WITH XEMIU

**Brand Name**

**Formulation**

**1:1 ratio premix of**  
**Pyraclostrobin + Fluxapyroxad**  
**(Cabrio®) (Xemium®)**

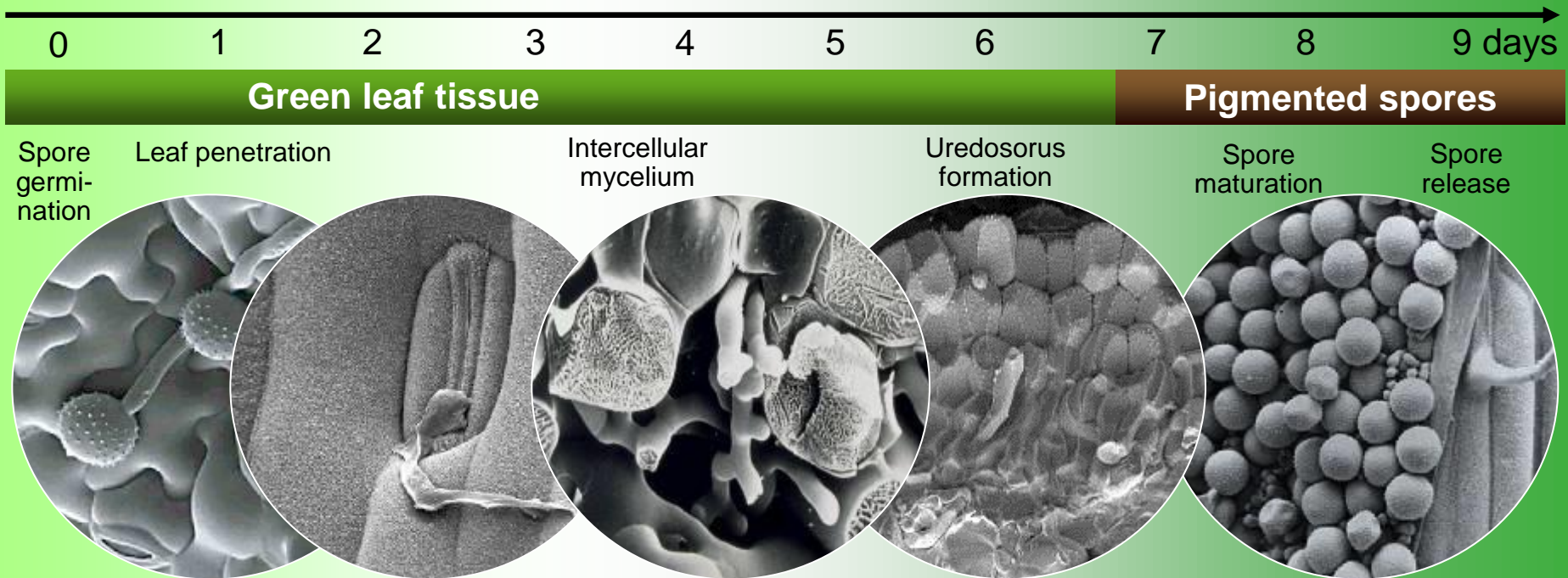
**Mode of Action**

**↓ ↓**  
**(Group 11) (Group 7)**  
**QoI SDHI**

**Registration**

- Currently ZRegistered in WA and OR on Apples, Pears and Cherries

# Xemium® fungicide active ingredient: Effect on Brown Rust Development Stages



**Preventative action**

**Post Infection**

**Xemium®**  
FUNGICIDE

(Group 7)

*Puccinia triticina*

Boscalid (Group 7)

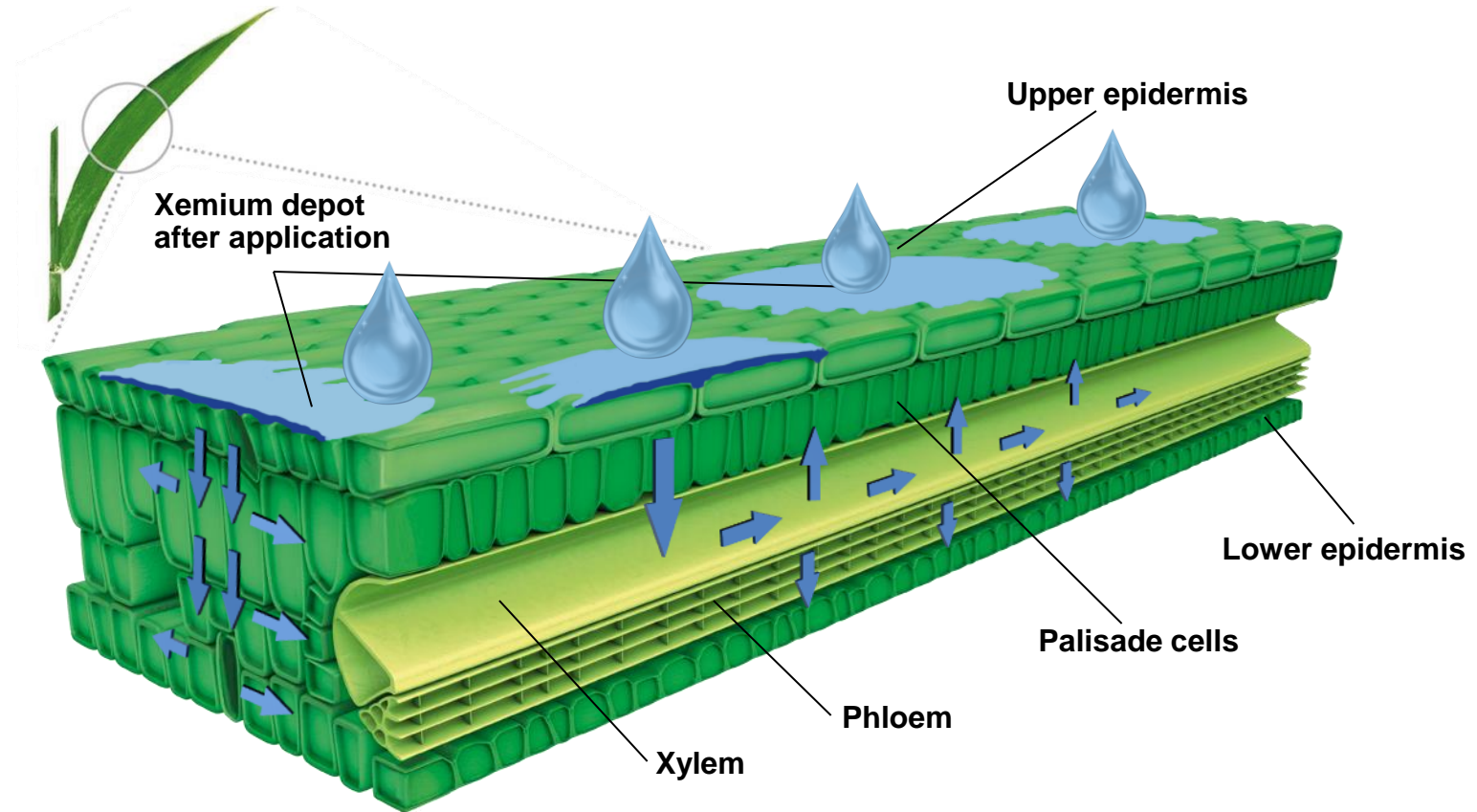
Triazoles (Group 3)

Strobilurins (Group 11)

# Merivon™ fungicide

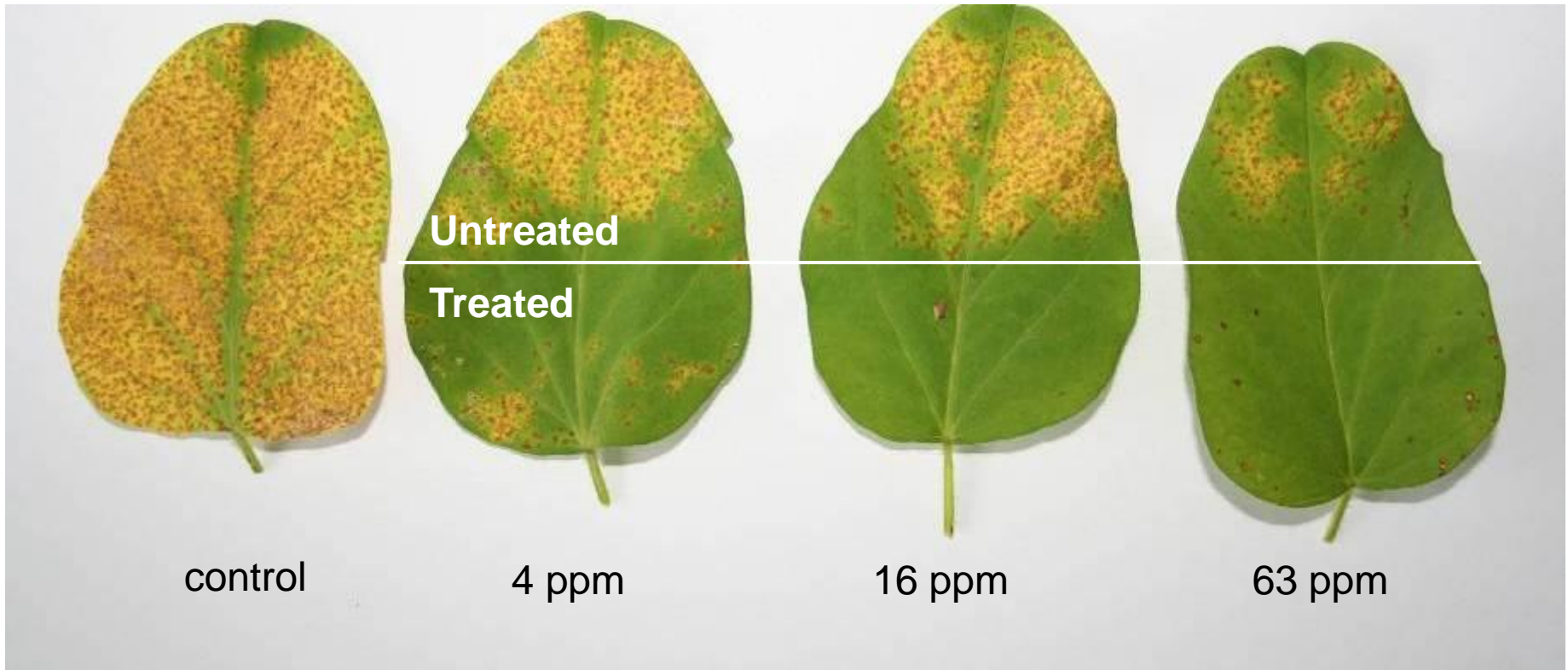
## Unique Delivery Drives Consistent Performance

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**Xemium is adsorbed to waxy layer and evenly transported in leaves**

# Xemium<sup>®</sup> fungicide Mobility: Distribution in Dicot Leaves



Source: Dr. Speakman, APR/FM

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**Mode of Action**

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**(Group 11) (Group 7)**  
**QoI SDHI**

**Registration**

- Pome and stone fruits (initial registration)
- Now registered in WA and OR
- Future registrations in various tree nut and vine crops.

# Group 7 (SDHI) Fungicides

Information Source, Fungicide Resistance Action Committee (FRAC) [www.frac.info](http://www.frac.info)

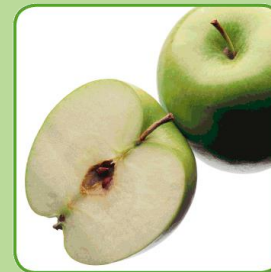


- All fungicides in this group share the same mode of action (MoA) and target site within the fungal cell.

<u>FRAC Code</u>	<u>MoA</u>	<u>Target site &amp; Code</u>	<u>Group name</u>
7	C. respiration	C2: Complex II: succinate-dehydrogenase	SDHI (Succinate dehydrogenase inhibitors)

**If you're not rotating FRAC groups you're NOT practicing resistance management!**

# Apple – Powdery Mildew (*Podosphaera leucotricha*)



- Merivon is very effective as the ‘lead off’ fungicide spray (tight cluster to Pink).
- Merivon testing and 2013 commercial use has shown significant activity on primary and secondary powdery mildew infections.
  - Xemium > Boscalid on primary infections.
  - Reducing primary inoculum can result in reduced PM incidence throughout the season.
- Pristine has typically been positioned in apples at Petal fall timing or later.
  - Excellent preventative PM control
  - Preharvest for storage molds



merivon™  
WITH XEMIUM

 **Pristine**  
FUNGICIDE

# Merivon fungicide Pome & Stone Fruit MRL Status

- Japan – Proposed MRL has been approved. Awaiting formal approval following public comment period, WTO notification....
  - Formal approval anticipated Q2 2014
- Taiwan
  - Anticipated Q4 2014
- All other major export MRL's have been approved.

## Merivon™ fungicide 2014 Positioning - Apple



- Due to the current MRL status focus use on non-bearing and/or domestic use acres.
  - Merivon can be used anytime during the season however ‘Lead-off’ (tight cluster to pink) applications for apple primary powdery mildew infections have proven highly effective.
  - On Highly Susceptible varieties: Block apply Merivon 4-5 fl oz/A for the first and second fungicide sprays of the season.
  - On Susceptible varieties: Apply Merivon 4-5 fl oz/A as either the first or second powdery mildew spray of the season.

## Merivon™ fungicide 2014 Positioning - Pear

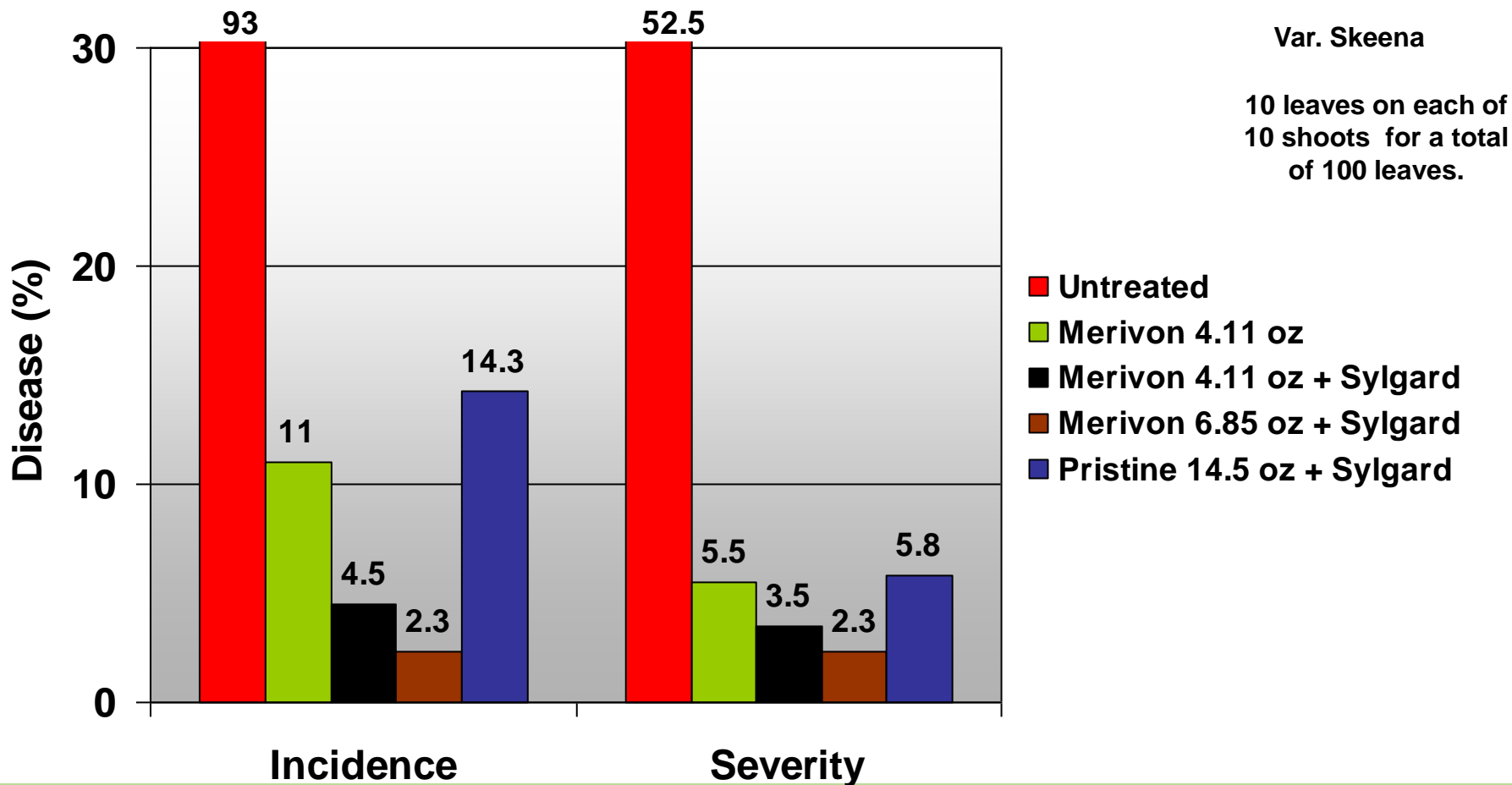


- Due to the current MRL status focus use on non-bearing and/or domestic use acres.
  - Use timing similar to Pristine for powdery mildew, scab, fruit finish and storage molds.
  - Petal fall +/- 10 to 14 days for fruit finish and powdery mildew control.
  - DO NOT apply to pears in a tank-mix with horticultural oil as crop response may occur.

# Merivon (solo applications) Cherry Powdery Mildew



Vern Fischer - Columbia Ag Research - Hood River, OR



A = shuck fall (4/30) B = SF + 14 (5/13) C = 13 DALT (5/26) D = 14 DALT (6/9) E = 14 DALT (7/8)

Sylgard 309 @ 0.025%. Evaluation 6-24-10 DEV-F-2010-US-GE4-A-01 CAR 1054

# Merivon™ fungicide Cherry Powdery Mildew Incidence

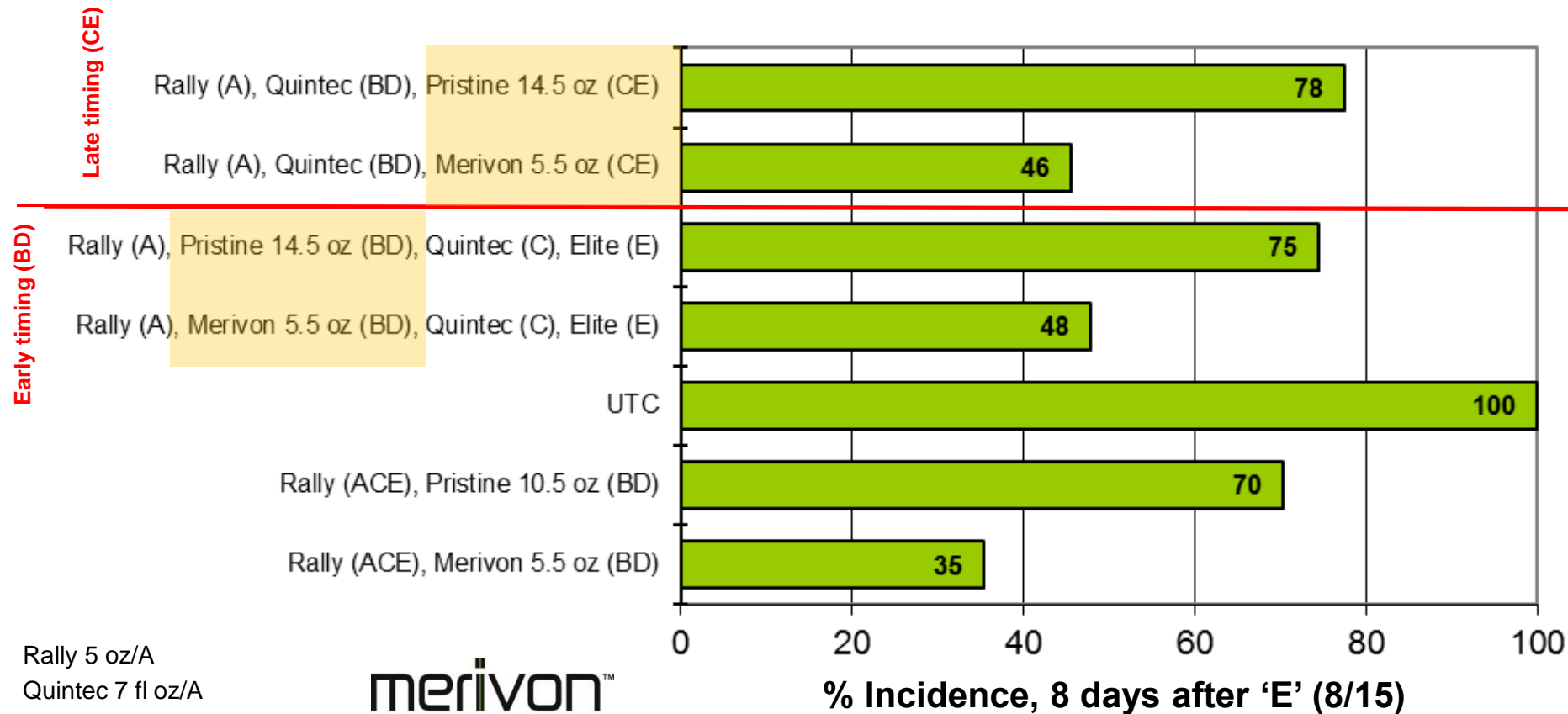
Dr. Steve Cockfield & Nick Stephens, NWCR, Ephrata, WA



**Trial conducted under severe powdery mildew pressure in a cherry nursery.**

Powdery mildew control with Merivon, Pristine, Rally and Quintec based on application rate and timing within a program.

A = 6/18, B = 7/2, C = 7/16, D = 7/30, E = 8/9



Rally 5 oz/A  
Quintec 7 fl oz/A  
Elite 6 oz/A



**% Incidence, 8 days after 'E' (8/15)**

# Merivon™ fungicide Cherry Powdery Mildew Severity

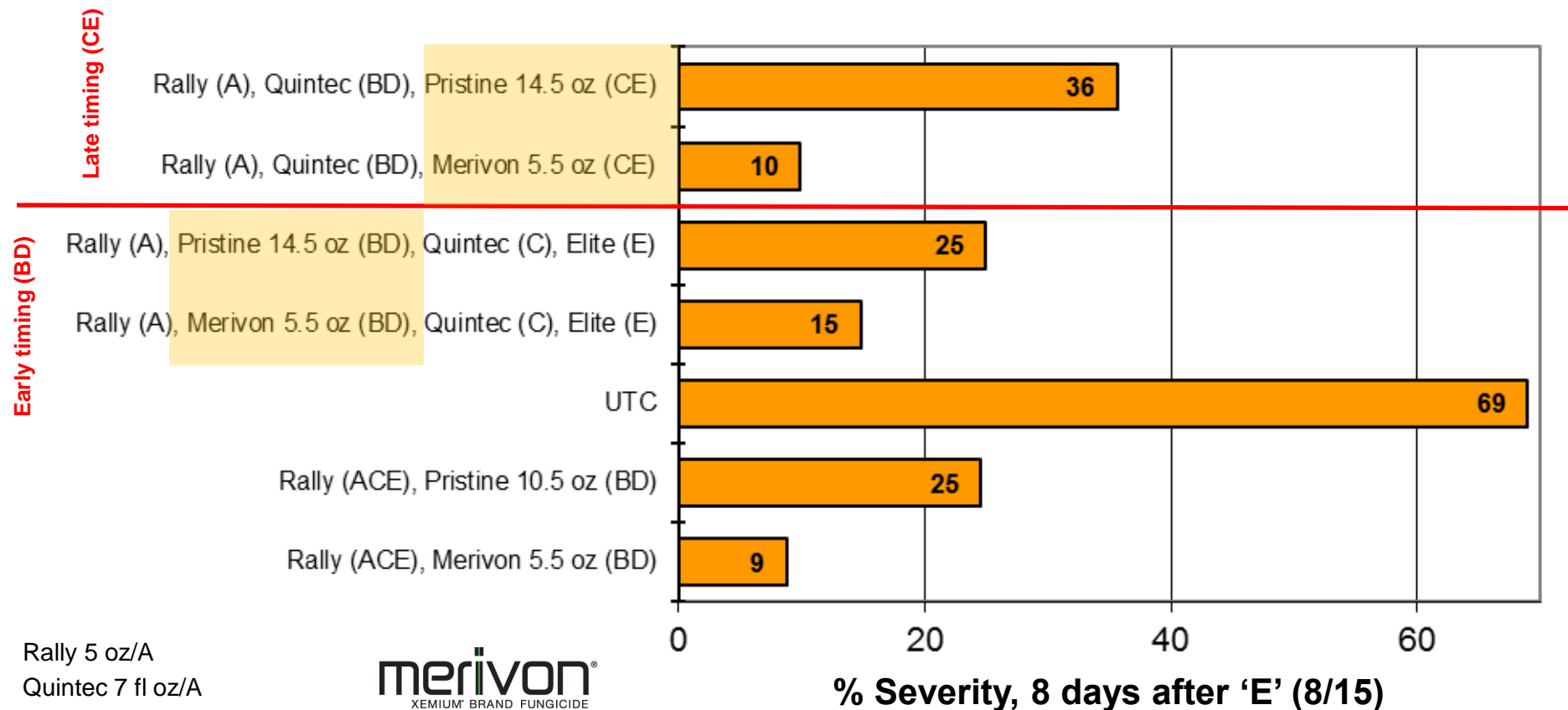
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Rally 5 oz/A  
Quintec 7 fl oz/A  
Elite 6 oz/A



**% Severity, 8 days after 'E' (8/15)**

## Merivon™ fungicide 2014 Positioning - Cherry



- Due to the current MRL status focus sales/demo's on non-bearing and/or domestic use acres to gain commercial experience.
  - Apply Merivon fungicide from petal fall to PF + 20-28 days for powdery mildew control.
  - Continue to utilize Pristine pre-harvest applications for brown rot, stem quality, fruit firmness and post harvest decay.

# Apogee PGR

## Cherry Label



### Application Rate for Vegetative Growth Control\*

Application Timing	Apogee Plant Growth Regulator Rate per Acre per Application**	Restrictions
High Vigor Trees	8 to 20 ozs/A	DO NOT apply more than 20 ozs/A within any 14-day interval. DO NOT apply more than 40 ozs/A of Apogee (2.5 lbs) per season.
Medium Vigor Trees	6 to 12 ozs/A	DO NOT apply more than 12 ozs/A within any 14-day interval. DO NOT apply more than 30 ozs/A of Apogee (1.875 lbs) per season.
Low Vigor Trees	--	DO NOT apply Apogee

\* Refer to Application Instruction under apples on the Apogee main label for rate calculations.

\*\* Based on 200 gallons of dilute spray per acre.

The APOGEE logo, consisting of the word "APOGEE" in bold, uppercase letters, enclosed within a purple oval shape.

# What is Apogee<sup>®</sup>?

- A Plant Growth Regulator
  - Used in apples and grasses grown for seed
  - Reduce vegetative growth and improve quality of fruit and seed.
- New use for Apogee
  - Vegetative growth reduction in sweet cherry



The Chemical Company

# How Does Apogee Help Improve Production Efficiency and Profitability?

# Apogee's Significant Benefits

- Reduces time required for pruning
  - **Potential for lower labor costs**
- Opens the canopy which improves:
  - **Light penetration**
  - **Fruit Quality**
  - **Possible reduced powdery mildew infestation**



# Apogee's Significant Benefits

## ■ Reduced Vegetative Growth

### ➤ Added sunlight exposure



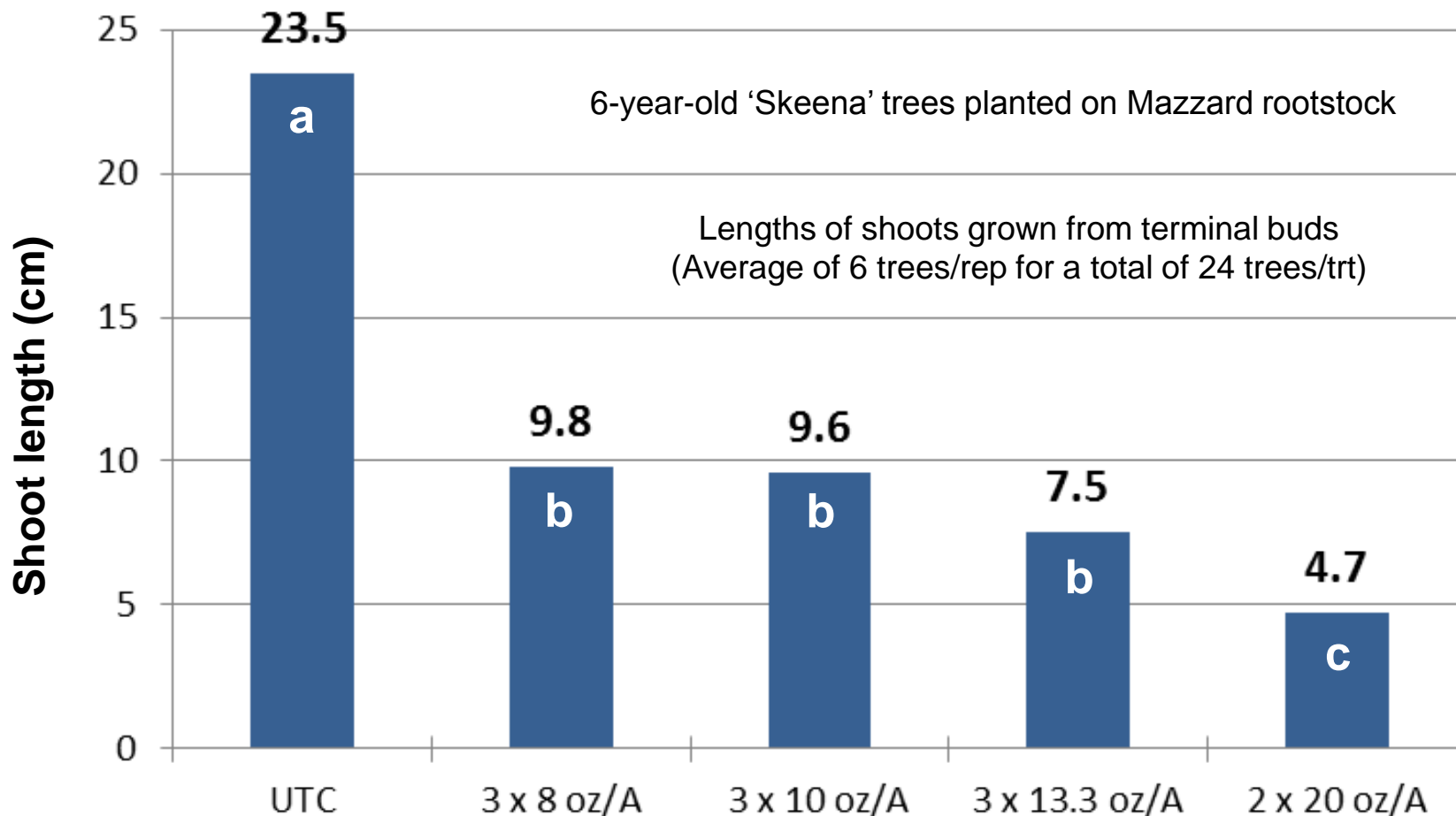
# Apogee for Cherry Label Update

- ❑ **Benefits from 2010 and 2011 trials for fruit quality**
  - Fruit Size
  - Sugar Content
  - Color
  - Firmness
  - No Delay in Maturity

# Apogee for use on Sweet Cherry



2010 Northwest Contract Research, Inc. Ephrata, WA

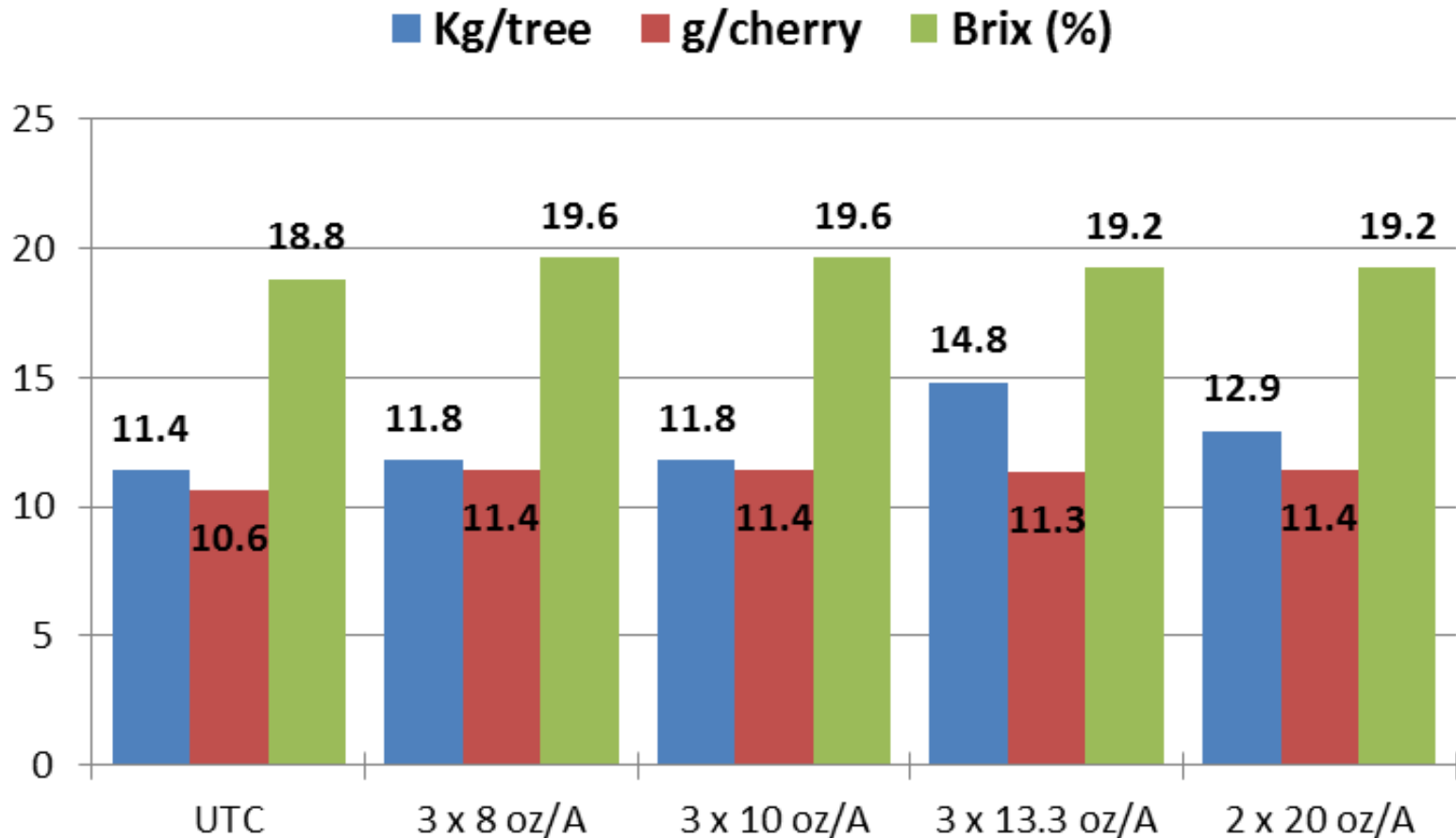


Applications: April 16 (50% Bloom), May 7, June 18, 2010

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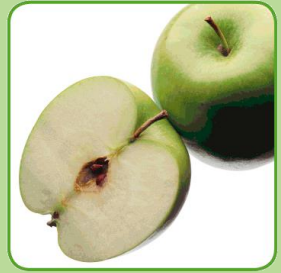


# Pre-harvest Pristine Fungicide Tank Mixes for Gray Mold (*Botrytis cinerea*) Control in Apple Storage

 **BASF**

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# Apple – Fungicide Preharvest Intervals (PHI)



- Pristine – 0 day
- Topsin – 1 day
- Ziram – 14 days

## Newly Registered Fungicides

- Merivon – 0 day
- Fontelis – 28 days
- Luna Sensation – 14 days

# Apple - Preharvest applications for postharvest storage mold control



- Pristine currently has significant preharvest use for storage molds.
  - However, Pristine insensitive Gray mold (*Botrytis cinerea*) has been identified (Dr. Xiao, WSU).
  - Tank-mix approach with Topsin and Ziram for resistance management has been evaluated with Pristine.
  
- The following inoculated trial evaluated a mixed population of Pristine susceptible and Pristine resistant Gray mold (*Botrytis cinerea*).

# Pre-harvest Applications for Apple Storage Rot

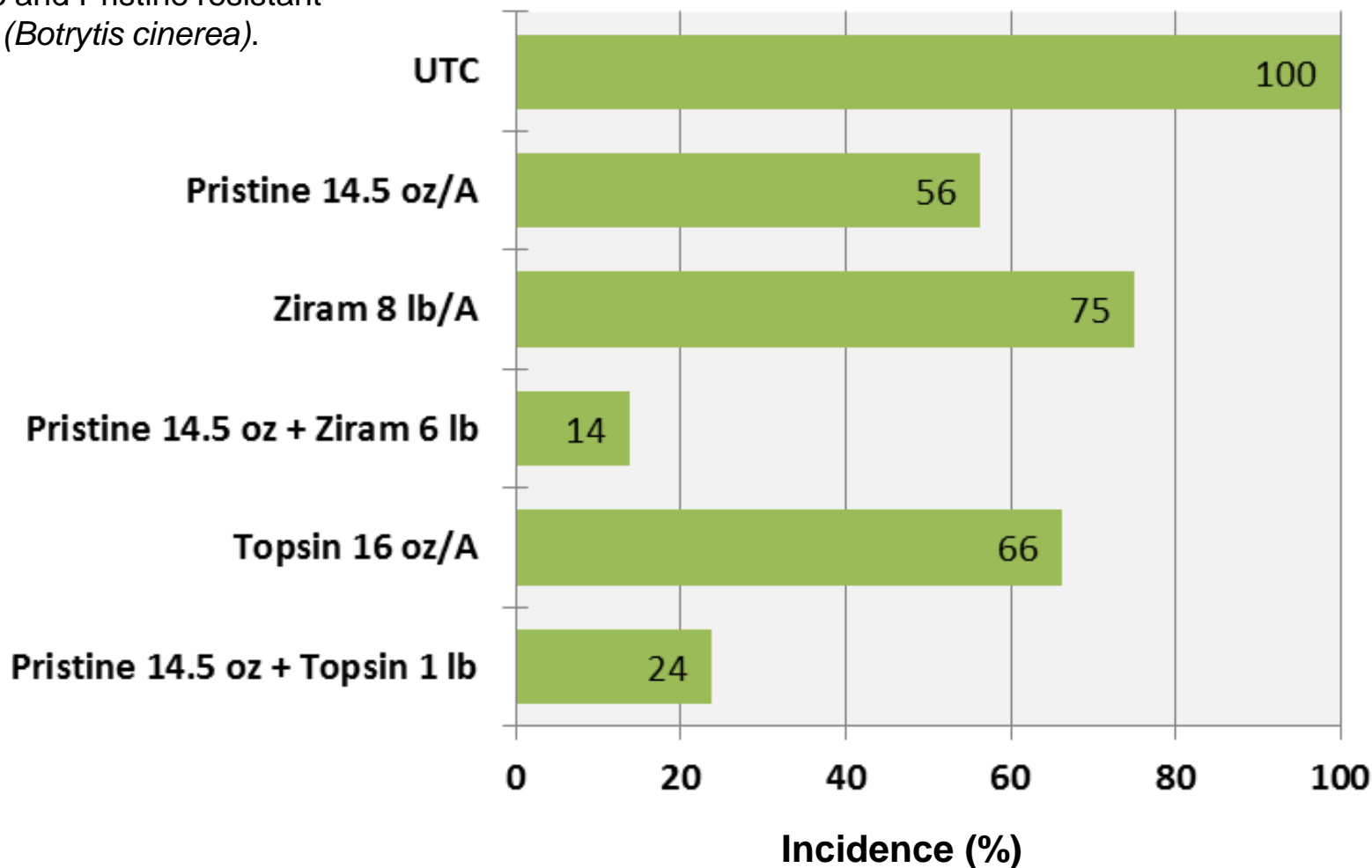
## Gray mold (*B. cinerea*)

Dr. Chang Lin Xiao – WSU – Wenatchee, WA



Mixed population of Pristine susceptible and Pristine resistant Gray mold (*Botrytis cinerea*).

(Inoculated trial)



# Pre-harvest Applications for Apple Storage Rot

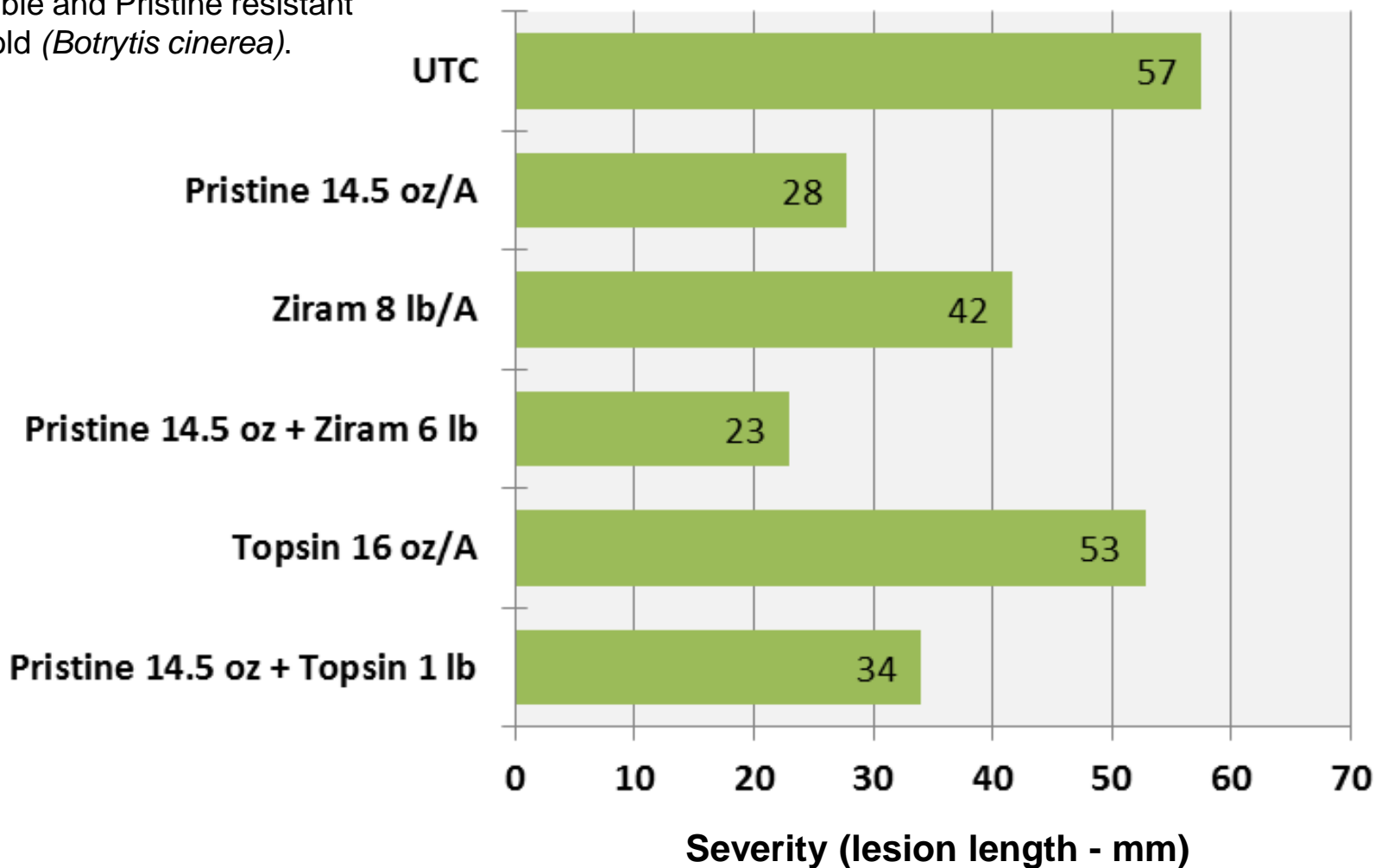
## Gray mold (*B. cinerea*)

Dr. Chang Lin Xiao – WSU – Wenatchee, WA



Mixed population of Pristine susceptible and Pristine resistant Gray mold (*Botrytis cinerea*).

(Inoculated trial)



# Pre-harvest Applications for Apple Storage Rot

Gray mold (*B. cinerea*)

Dr. Chang Lin Xiao – WSU – Wenatchee, WA



## ■ Trial Summary

- Pristine 14.5 oz/A provided greater gray mold control than Ziram 8 lb/A or Topsin 1 lb/A alone.
- When Pristine 14.5 oz/A was tank mixed with Ziram 6 lb/A gray mold control was greater than with either Pristine or Ziram 8 lb/A applied alone.
- When Pristine 14.5 oz/A was tank mixed with Topsin 1 lb/A gray mold control was greater than with Pristine or Topsin solo applications.
- Treatment performance

(Pristine + Topsin) = (Pristine + Ziram) > (Pristine) > (Ziram) = (Topsin)

**BASF recommends** tank-mixing preharvest Pristine applications with Ziram or Topsin for botrytis resistance management.



# Powdery Mildew Control with Vivando™ fungicide in Sweet Cherry

 **BASF**

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# Vivando™ Fungicide



- Vivando fungicide is currently ONLY labeled in grapes
  - IR-4 projects submitted in 2013 to EPA
    - Cherry (Not yet labeled)
    - Hops (Not yet labeled)
  - BASF project submitted in 2013 to EPA
    - Apples and Pears (Not yet labeled)

# Vivando™ Sweet Cherry Testing



- Trial objectives:
  - Evaluate Vivando versus competitive fungicides without adjuvants for the control of powdery mildew.
  - Evaluate Vivando crop tolerance with various additives/adjuvants when applied to cherries var “Skeena”.
- Experimental design:
  - Randomized complete block design with 10 treatments and 4 replicates. Each replicate consisted of 3 trees.

# Vivando™ Sweet Cherry Testing



- Application Information:

- Treatments were applied with a backpack mist blower calibrated to deliver 100 gpa.
- All applications buffered with 8 fl oz/100 gal Tri-Fol.
- Application timing (ABCDEF)

Code	Protocol Interval	Application Date (interval)
A	Petal Fall	May 1, 2013
B	7 days after A	May 8, 2013
C	9 days after B	May 17, 2013
D	13 days after C	May 30, 2013
E	12 days after D	June 11, 2013
F	10 days after E	June 21, 2013

# Vivando™ Fungicide



- With its unique mode of action (FRAC U8) and efficacy Vivando fungicide, once registered will provide an additional tool for powdery mildew control and resistance management in cherries, apples, pears and hops.

 **BASF**

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**Thanks for your  
support!**





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