

Status, monitoring and management of SWD in Michigan

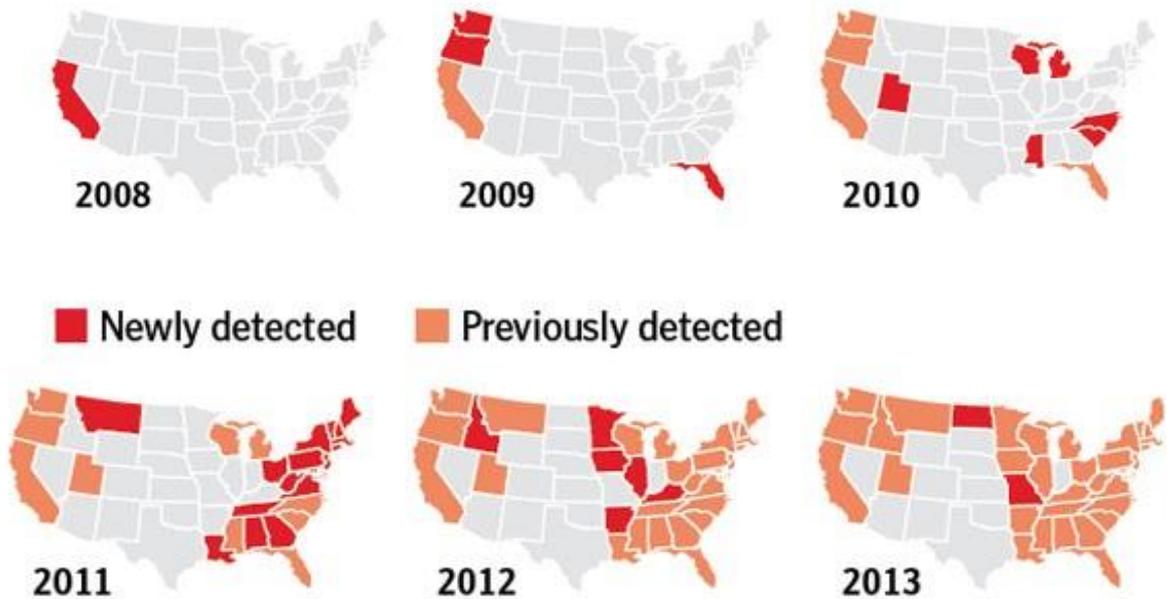


Rufus Isaacs, Steve Van Timmeren, Craig Roubos, and John Wise

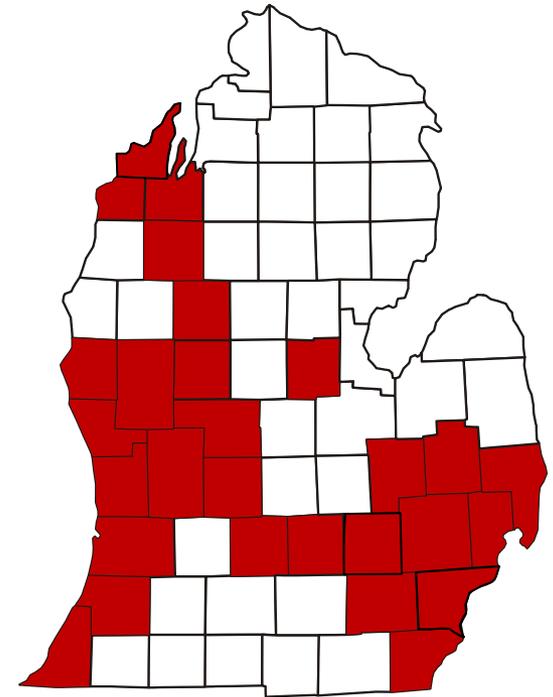
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Status: distributed across the Great Lakes region



The Boston Globe and Hannah Burrack, NCSU



MSU Extension Fruit Team

Extension and research activities, and future plans

Home » Invasive Species » Spotted Wing Drosophila

Spotted Wing Drosophila

Welcome to MSU's Spotted Wing Drosophila site

This site contains information and links for growers and homeowners about a **new invasive pest in Michigan**, the Spotted Wing Drosophila.



- [Factsheets](#)
- [Monitoring](#)
- [Crop recommendations](#)
- [Educational meetings](#)
- [Contacts](#)
- [Response Team](#)

2013 Update

For weekly reports on the status of this pest, stay informed through [MSU Extension's Fruit & Nuts News](#).

Weekly Michigan spotted wing Drosophila reports:

- [Aug. 27, 2013](#) - As harvest is winding down in many crops at high risk from spotted wing Drosophila, fly numbers are similar to last week's total catch.
- [Aug. 20, 2013](#) - Spotted wing Drosophila captures continue to rise as harvest winds down in some blueberry and raspberry sites.
- [Aug. 13, 2013](#) - Spotted wing Drosophila catches are increasing in fields and orchards where harvest is completed and insecticide residues are minimal.

- Management guidelines for berry crops
- Extension programming - hands-on workshops, etc.
- SWD website development and maintenance

- Monitoring and trap improvements
- Insecticide evaluations in blueberry and raspberry
- Resistance monitoring
- Rainfall effects on crop protection
- Post-harvest control
- Sprayer comparisons

- NC-IPM funded project with UW, UMN
- SCBG-funded project

Monitoring: phenology of SWD activity

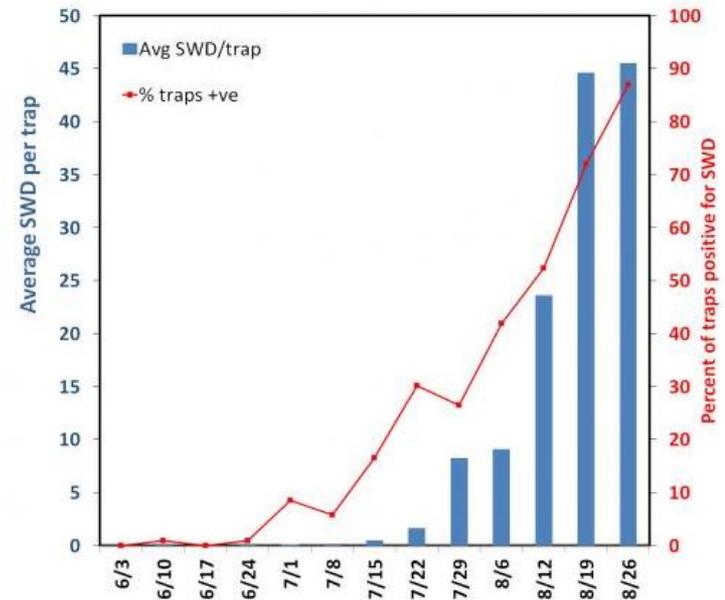
First SWD detections:

9-23-10, 7-7-11, 6-8-12, 6-6-13

Rapid population growth in late July-early August.

Just after cherry harvest, during later blueberry cultivars and raspberry/blackberry ripening period.

Weekly SWD reports online

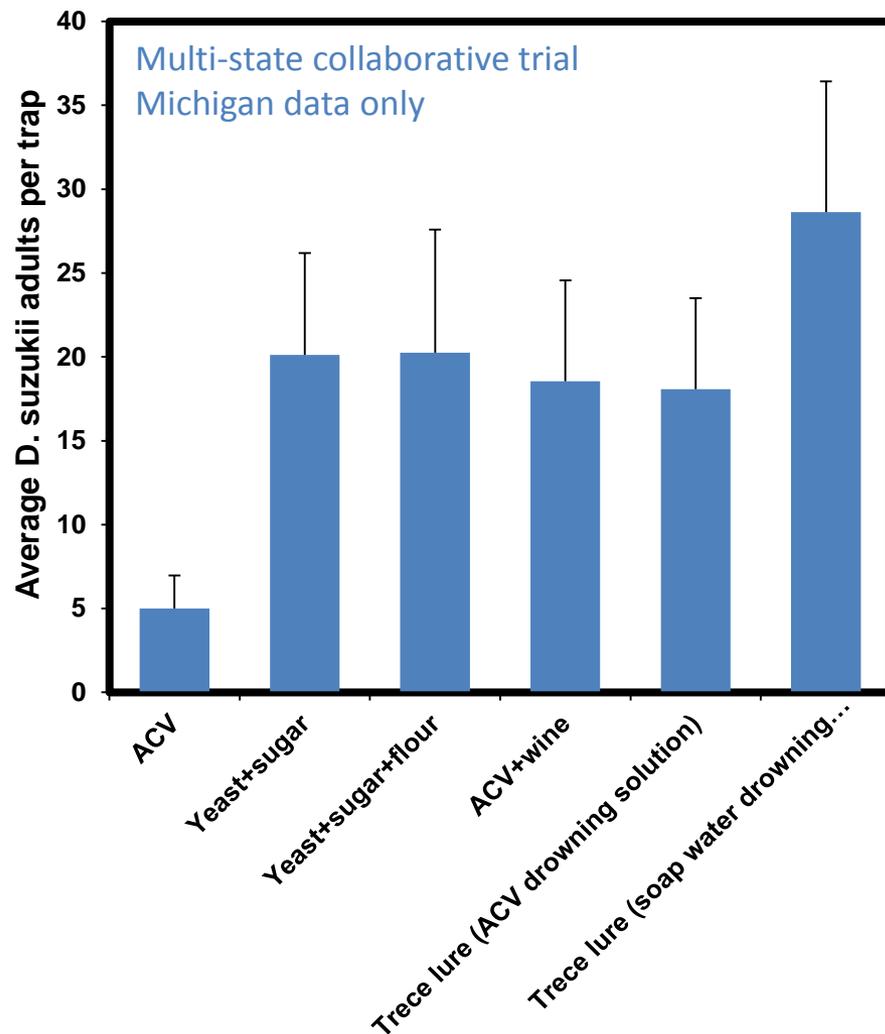


Michigan State University Extension website screenshot showing a news article titled "Michigan spotted wing Drosophila report for Aug. 27, 2013". The article text reads: "As harvest is winding down in many crops at high risk from spotted wing Drosophila, fly numbers are similar to last week's total catch." It is dated August 27, 2013, and attributed to Nikki Rothwell and Karen Powers. The website header includes navigation links for Home, About, Events, and Counties, and a menu with categories like 4-H & Youth, Agriculture, Business, etc.

Facebook post screenshot sharing the Michigan spotted wing Drosophila report. The post includes a smaller version of the SWD activity chart and the text: "Michigan spotted wing Drosophila report for Aug. 13, 2013 | MSU Extension msue.ann.msu.edu". Below the chart, it states: "Spotted wing Drosophila catches are increasing in fields and orchards where harvest is completed and insecticide residues are minimal." The post has 48 likes and 0 comments.

Monitoring for SWD

- Consultants and scouts using yeast-sugar mix as bait.
- Ease of use is a major issue.
- Effectiveness of 'home-made' traps
 - Some are quite small, with few holes, not placed in the shade
- Questions about the value of traps for anything more than first detection.
- Correlation to infestation risk?



Management: 2013 SWD semi-field trial

Elliott fruit sprayed in the field
Shoots picked 3, 7, 10, 14 DAT



6 male and 6 female SWD
Assess infestation after 9d

	SWD eggs, larvae, pupae in 5 berries			
	3 DAT		7 DAT	
Untreated	9.8 ± 2.8	a	49.0 ± 6.2	a
Assail 30SG 5.3 oz	1.0 ± 0.6	bc	5.0 ± 1.1	cd
Bifenture 10DF 12.0 oz	1.8 ± 1.8	bc	9.5 ± 1.9	bc
Danitol 2.4EC 10.6 oz	0.3 ± 0.3	bc	2.3 ± 1.3	d
Danitol 2.4EC 16.0 oz	0.0 ± 0.0	c	2.0 ± 1.4	d
Exirel 13.5 oz	0.0 ± 0.0	c	3.8 ± 3.8	cd
Hero 2.13SC 6.4 oz	1.3 ± 0.9	bc	8.8 ± 5.2	cd
Malathion 8F 2.5 pt	6.0 ± 4.5	b	23.0 ± 7.8	ab
Mustang Max 4.0 oz	0.0 ± 0.0	c	4.3 ± 2.0	cd

Why did Malathion perform so poorly – temperature?

Management: 2013 SWD blueberry field trial

- Mature Jersey field
- Small plot, woods
- Airblast application
- 50 GPA

- July 24 start
- Aug 20 assessment
- Every 7, 10 or 14 d
i.e. 4, 3, or 2 sprays

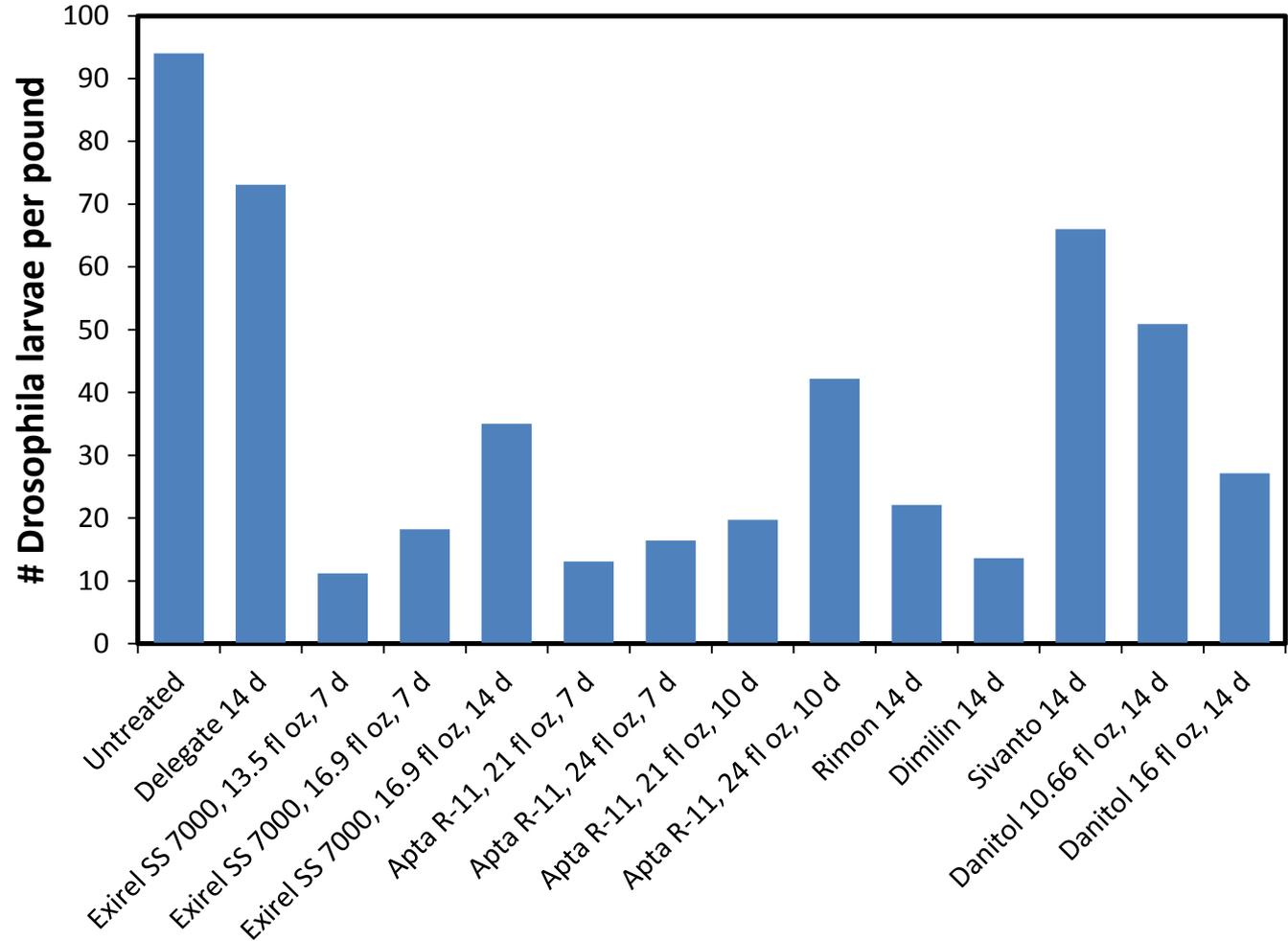
- Brown sugar solution
- Drosophila/pound

Encouraging results for:

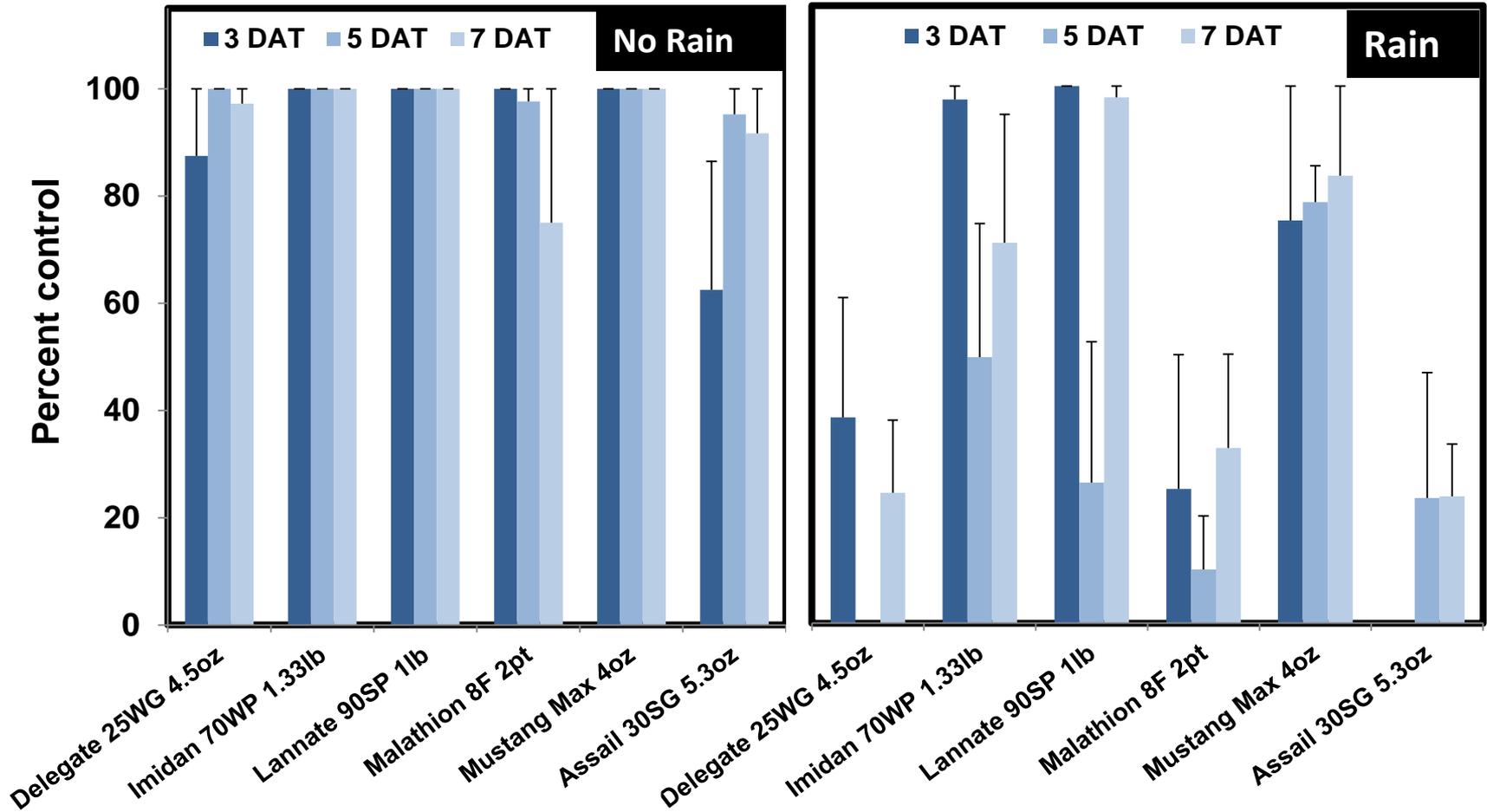
Exirel (DuPont)

Apta (Nichino)

Dimilin (Chemtura)



Management: rainfall trial – 0.8 inches 1 day post-spray



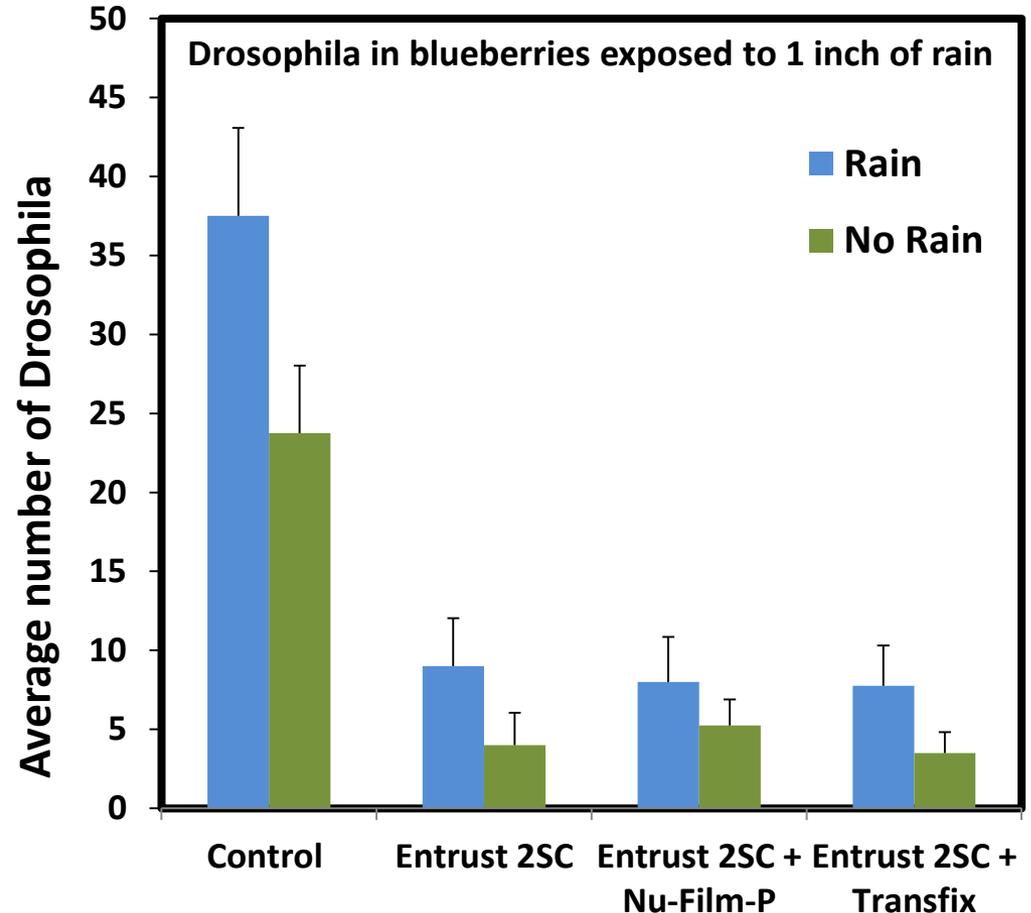
Management: can rainfastness be improved?

Bluecrop at TNRC
Small plots
Airblast application
50 GPA on August 7

Shoots picked 1DAT

Exposed to 1 inch rain then
to SWD for 7 days.

No evidence of rainfastness
improvement



Management: do post-harvest sprays reduce SWD?

Pairs of fields at four farms.

One treated post-harvest,
one not.

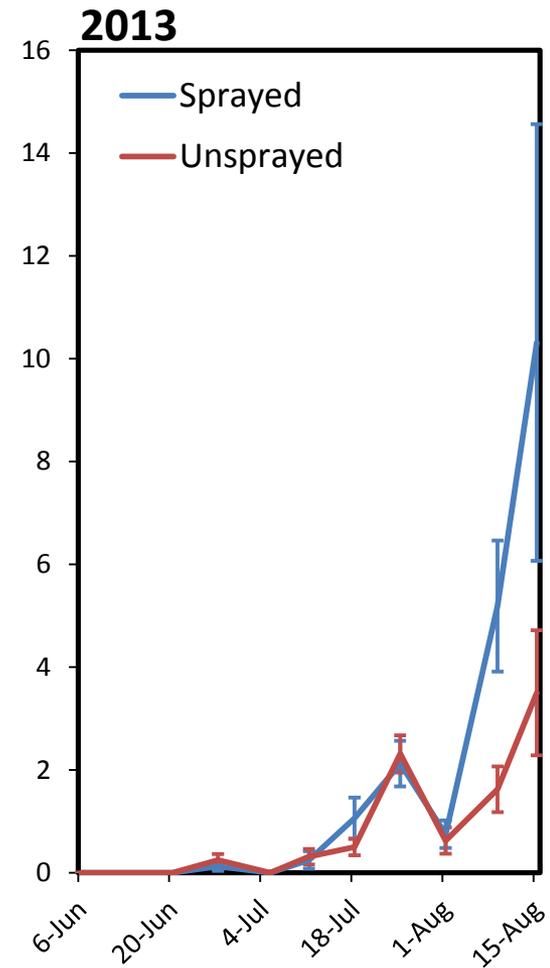
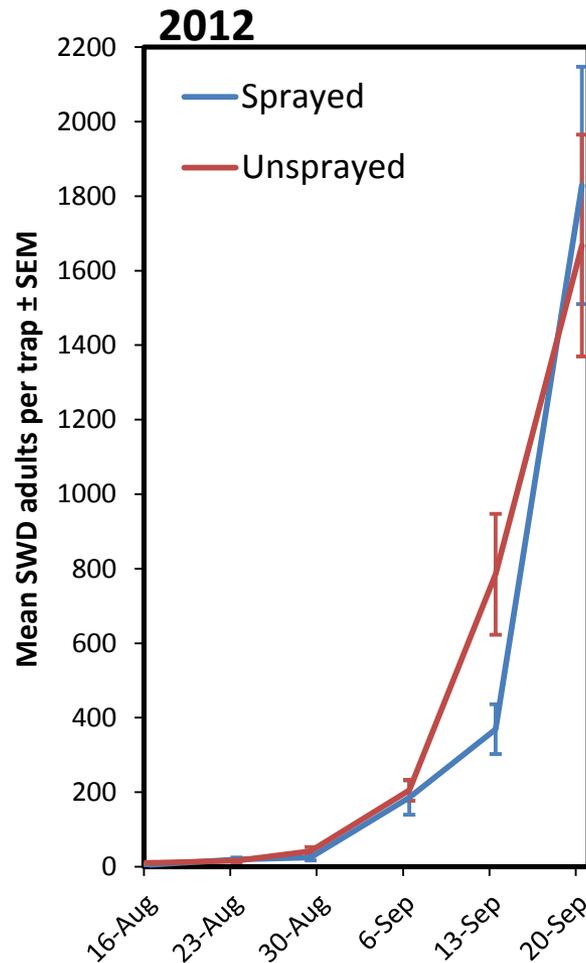
Sprays applied in 2012.

Imidan on Sept. 6

Mustang Max on Sept. 13

Transient reduction in SWD
catches.

No benefit in 2013 season.



Management: key insecticides for SWD control in blueberry

Class	Trade name	Active ingredient	PHI (d)	Residual (d)	RANK
OP	Malathion	malathion	1	5-7	***
	Imidan	phosmet	3	7-10	****
Pyrethroid	Mustang Max	z-cypermethrin	1	5-7	***
	Bifenture/Brigade	bifenthrin	1	5-7	**
	Hero	z-cyp + bifenth.	1	5-7	***
	Danitol	fenpropathrin	3	5-7	****
	Asana	esfenvalerate	14	5-7	***
Carbamate	Lannate	methomyl	3	7	****
[Diamide]	[Exirel]	[cyazypyr]	[3?]	7	****
Spinosyn	Delegate	spinetoram	3	7	***
	Entrust (organic)	spinosad	3	3-5	**
Neonicotinoid	Assail	acetamiprid	1	5-7	**
Pyrethrum	Pyganic (organic)	pyrethrum	0.5	2	*

Management: is sensitivity to insecticides declining?

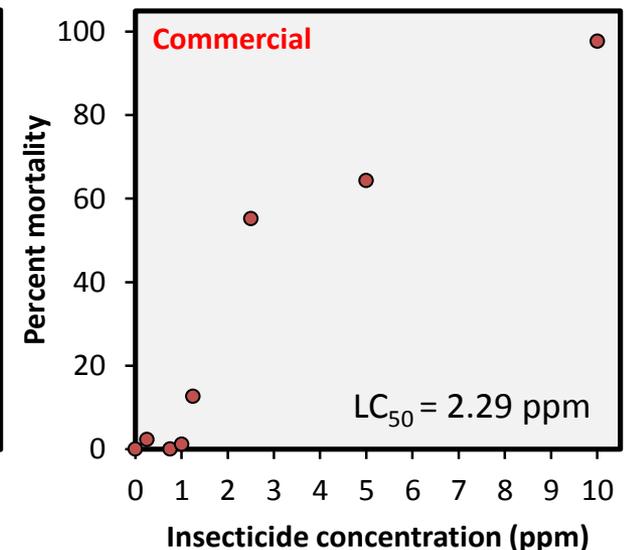
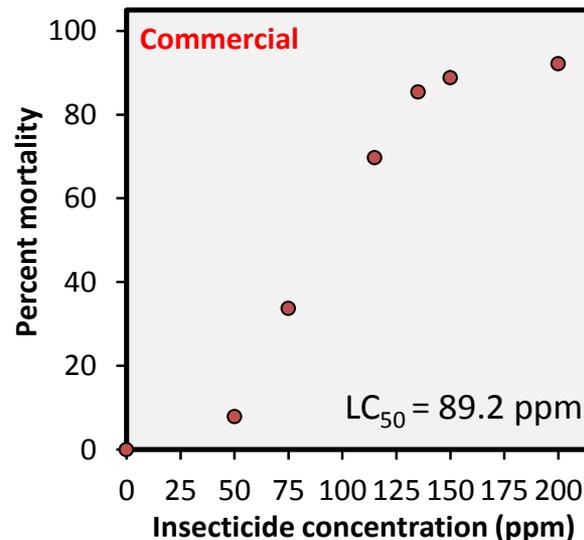
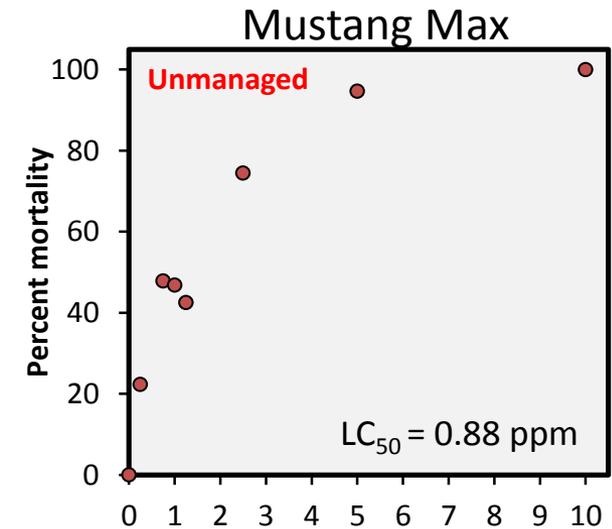
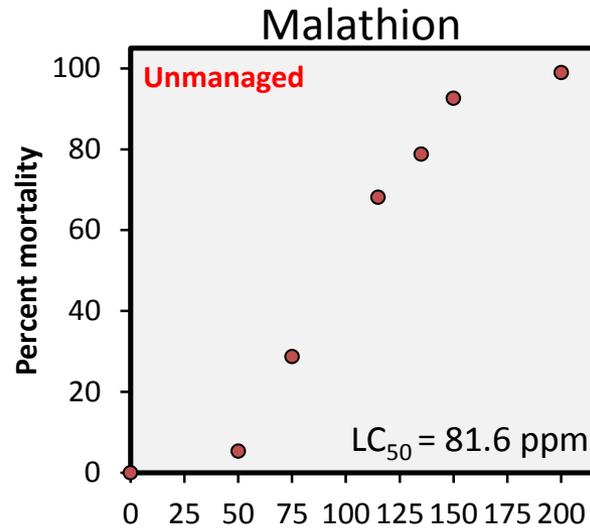
Collections of SWD in 2012

Fields with/without a history of spraying for insect control

Untreated + 6 concentrations tested against these two popns.

Malathion and Mustang Max formulated product tested

No evidence of resistance, but a trend to watch on Mustang Max



Management: causes of sub-optimal SWD control

- Intervals too long, no reapplication, [no rotation].
- High yielding fields made access difficult.
- Rapid ripening of early cultivars.
- Heavy rainfall in mid-harvest, unlike 2012.
- Cooler weather late-season stretched harvests.
- Low berry prices delayed or cancelled some harvests.

A final thought: the tough new math of SWD control

Effective product	100%	100%	100%	100%
Appropriate interval	100%	80%	100%	100%
Excellent coverage	100%	100%	100%	80%
Reapplication after rain	100%	100%	50%	50%
Success?	100%	80%	50%	40%



Questions?

