Grape Insect Management Update




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Extension Entomologist
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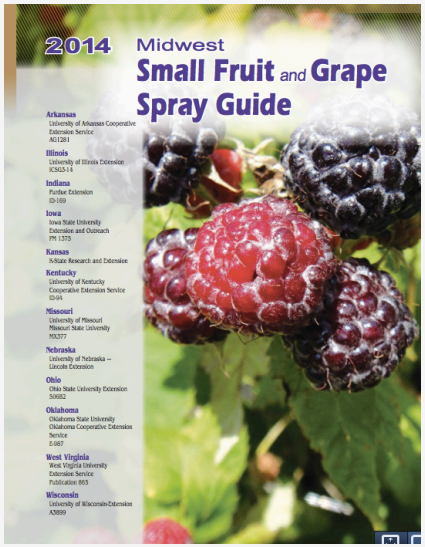
The Ohio State University

News on spray guides



- **2015 & earlier:**
  - Midwest Small Fruit & Grape Spray Guide, 88 pp (~$10)
  - Midwest Tree Fruit Spray Guide, 72 pp (~$10)
  - buy from OSU
- **2016:**
  - **Midwest Fruit Pest Management Guide, 168 pp (~$15)**
  - **buy directly from Purdue University**

Any new insecticides for grapes?

	2015	2014	2013
New products	Sivanto	Nealta	~~Closer~~
New uses	-	-	Venom/ Scorpion

Sivanto™ on grapes

Rate	***Foliar*** *(PHI: 0 day)*	***Soil*** *(PHI: 30 days)*
Low (7-10.5 fl oz/A)	**Leafhoppers**	
Medium (12-14 fl oz/A)	**Vine mealybug**	
High (21-28 fl oz/A)		**Leafhoppers** **Vine mealybug**

Grape pests: current interest

Old	Periodical cicada 
Potential	Spotted lanternfly 
New	Spotted wing drosophila 
	Brown marmorated stink bug 

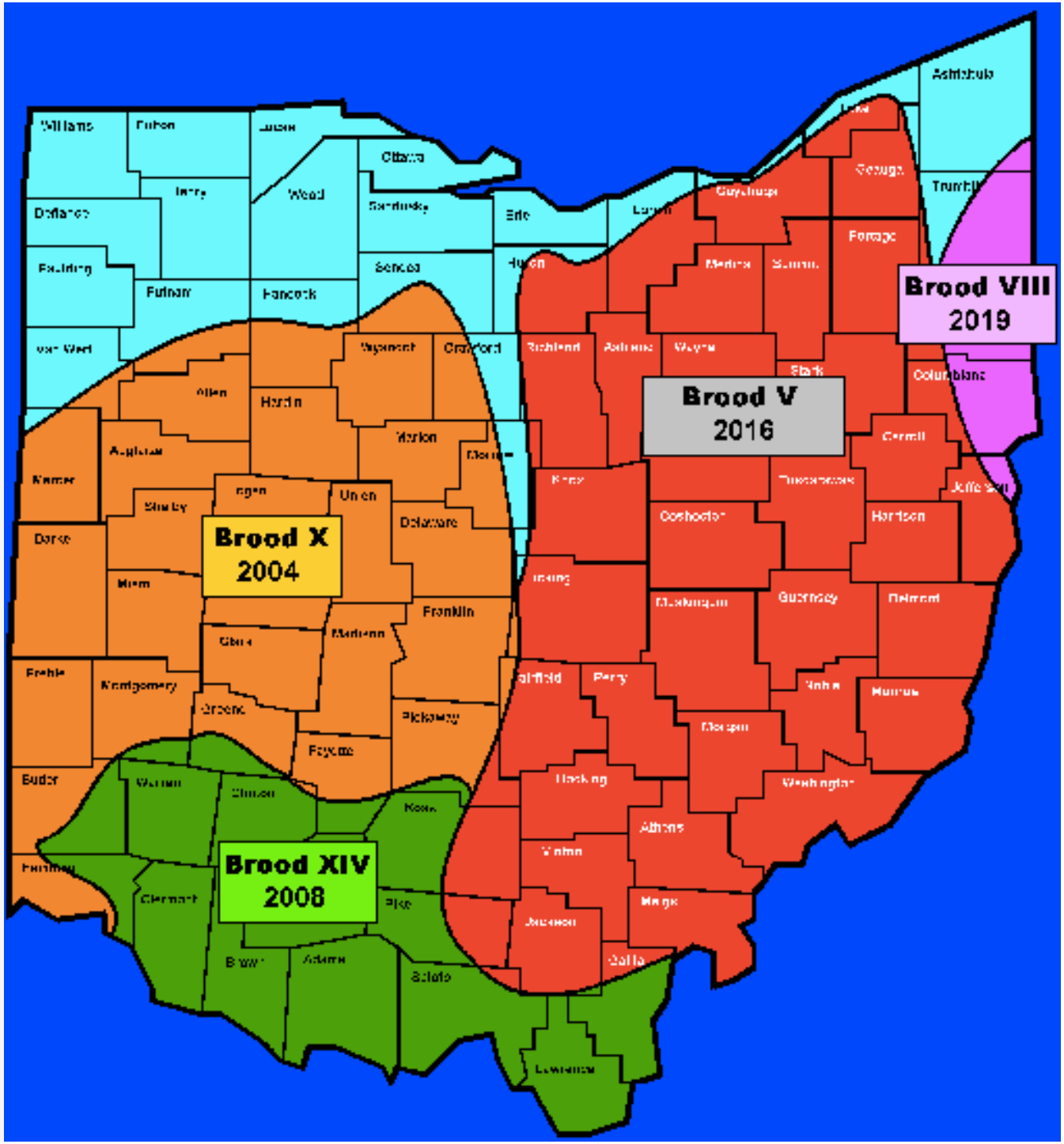
& survey to see which ones YOU think are most important

Periodical Cicada: broods

17-year Broods	Year				General region
I	1961	1978	1995	2012	VA, WV
II	1962	1979	1996	2013	CT, MD, NC, NJ, NY, PA, VA
III	1963	1980	1997	2014	IA, IL, MO
IV	1964	1981	1998	2015	IA, KS, MO, NE, OK, TX
V	1965	1982	1999	2016	MD, OH, PA, VA, WV
VI	1966	1983	2000	2017	GA, NC, SC
VII	1967	1984	2001	2018	NY
VIII	1968	1985	2002	2019	OH, PA, WV
IX	1952	1969	1986	2003	NC, VA, WV
X	1953	1970	1987	2004	DE, GA, IL, IN, KY, MD, MI, NC, NJ, NY, OH, PA, TN, VA, WV
XIII	1956	1973	1990	2007	IA, IL, IN, MI, WI
XIV	1957	1974	1991	2008	KY, GA, IN, MA, MD, NC, NJ, NY, OH, PA, TN, VA, WV
13-year Broods					
XIX	1972	1985	1998	**2011**	AL, AR, GA, IN, IL, KY, LA, MD, MO, MS, NC, OK, SC, TN, TX, VA
XXII	1975	1988	2001	2014	LA, MS
XXIII	1976	1989	2002	2015	AR, IL, IN, KY, LA, MO, MS, TN

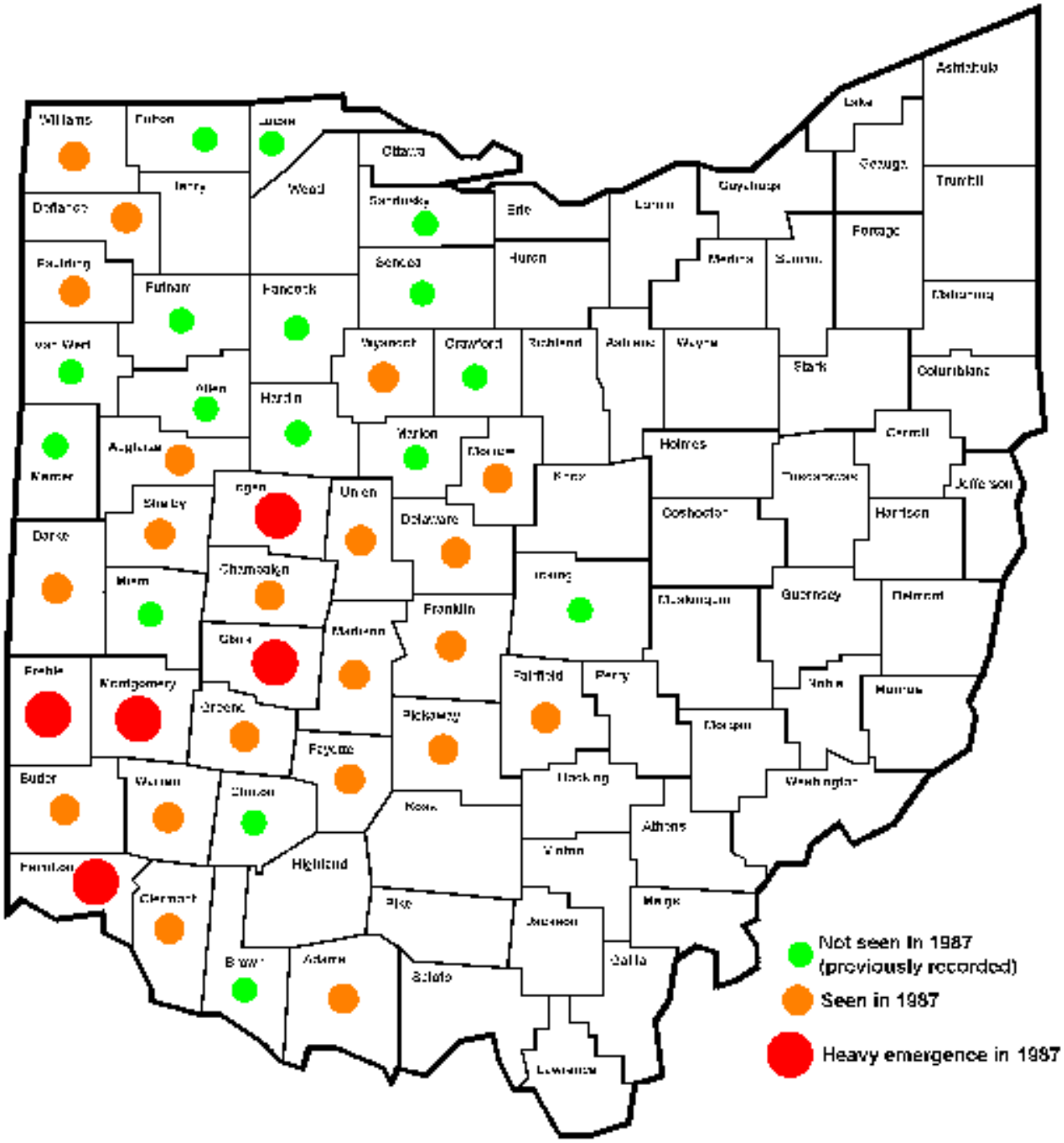
Periodical Cicada

- Expected in eastern Ohio in 2016
- Emerge May to July
- Adults live 2 – 4 weeks

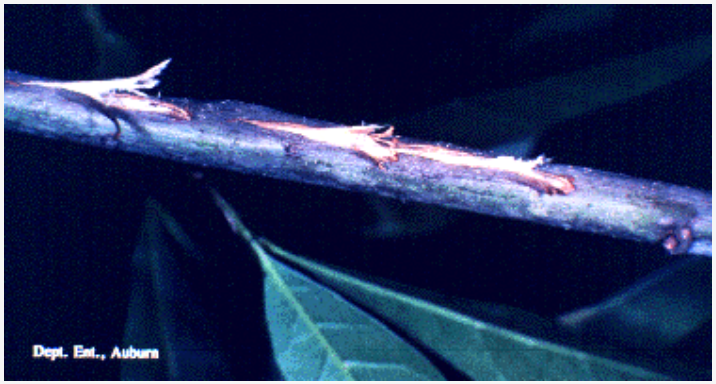


Periodical Cicada:

actual emergence might not be exactly where predicted (e.g. brood X)



Periodical Cicada



- **Damage**
  - Injure bark by egg laying
  - Prefer 1/4 to 1/2” diameter
  - ‘Flagging’
- **Nuisance**
  - Large numbers
  - Males’ loud calling

Periodical Cicada

- **Cultural control:**
  - Delay new plantings until next spring
- **Mechanical control:**
  - Netting, before egg laying
  - Pruning, after egg laying
- **Chemical control:**
  - Apply when egg-laying begins
  - Repeat 7 – 10 days later

Periodical Cicada: control by insecticide on grapes

Product (registered on grape)	Cicada listed as target on grape?
Danitol (RUP)	YES
Sevin	no
Baythroid (RUP)	no
Gladiator (RUP)	no
Hero (RUP)	no
Brigade (RUP)	no
MustangMaxx (RUP)	no
Assail	no

Periodical Cicada: control by insecticide on grapes

Product (registered on grape)	Cicada listed as target on grape?	Cicada listed as target on apple or peach?
Danitol (RUP)	YES	yes
Sevin	no	yes
Baythroid (RUP)	no	yes
Gladiator (RUP)	no	no
Hero (RUP)	no	no
Brigade (RUP)	no	no
MustangMaxx (RUP)	no	no
Assail	no	no

Periodical Cicada: control by insecticide on grapes

Product (registered on grape)	Cicada listed as target on grape?	Cicada listed as target on apple or peach?	Cicada not listed but likely to work
Danitol (RUP)	YES	yes	-
Sevin	no	yes	-
Baythroid (RUP)	no	yes	-
Gladiator (RUP)	no	no	yes
Hero (RUP)	no	no	yes
Brigade (RUP)	no	no	yes
MustangMaxx (RUP)	no	no	yes
Assail	no	no	yes

Periodical Cicada: beware of mite flare-ups after pyrethroid

Product	category	Effect on mites
Baythroid	standard pyrethroid	Flare-ups likely
Mustang Maxx		

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Brigade		
Hero	pre-mix standard + miticidal pyrethroids	
Gladiator	pre-mix standard pyrethroid + miticide	Flare-ups unlikely

Potential pest of fruit crops in Ohio:

Spotted lanternfly

- Found Sept. 2014, Berks Co., PA (NW of Philadelphia)
- Native to China

Spotted lanternfly

- A planthopper
- Sucks sap
- 1” long
- Poor flier
- Strong jumper

Spotted lanternfly: hosts

- **Feeds on:**
  - Grape
  - Apple
  - Cherry
- **Hosts in fall:**
  - Tree of Heaven
  - Grapes

Spotted lanternfly: behavior

- Congregate on trunk at base

Spotted lanternfly: damage

- Weeping wounds of sap on bark
- Excrete large amounts of fluid
- Mold grows on sweet fluid

Spotted lanternfly: egg masses

- **Laid in September**
- **New masses:** covered with gray pitch-like material
- **Older masses:** columns of brown seed-like columns
- **On trees, stones, furniture**

Spotted lanternfly: life cycle

- **Egg hatch April, May**
- **4 nymph sub-stages**
- **Young:** black with white spots
- **Older:** red with white spots
- **Adults by July**
- **Eggs by late Sept.**

Spotted lanternfly: where to look?

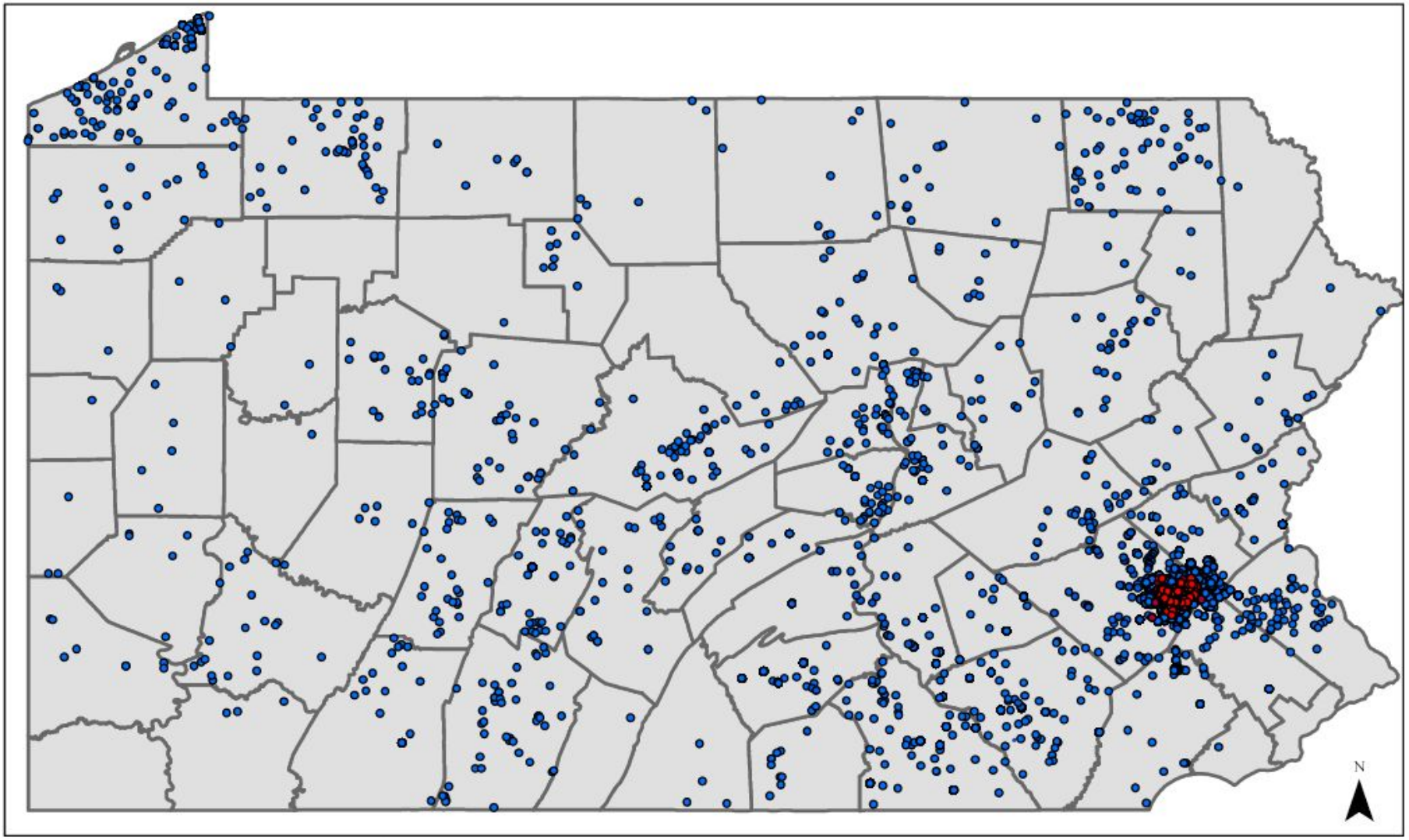
- In evening or night: look on trunk
- In day: look at base of plant
- Eggs: look on smooth surfaces (bark, brick, stone, dead plant tissue)

Spotted lanternfly: control?

- Egg mass scraping
  - 603,645 killed as of 12/2015
- Tree banding
  - Sticky bands to catch nymphs
  - 174,390 killed as of 11/2015
- Quarantine

Lycorma Detection Survey

Results through 5 Oct 2015



Spotted Lanternfly Presence

- Present
- Not Found

pennsylvania
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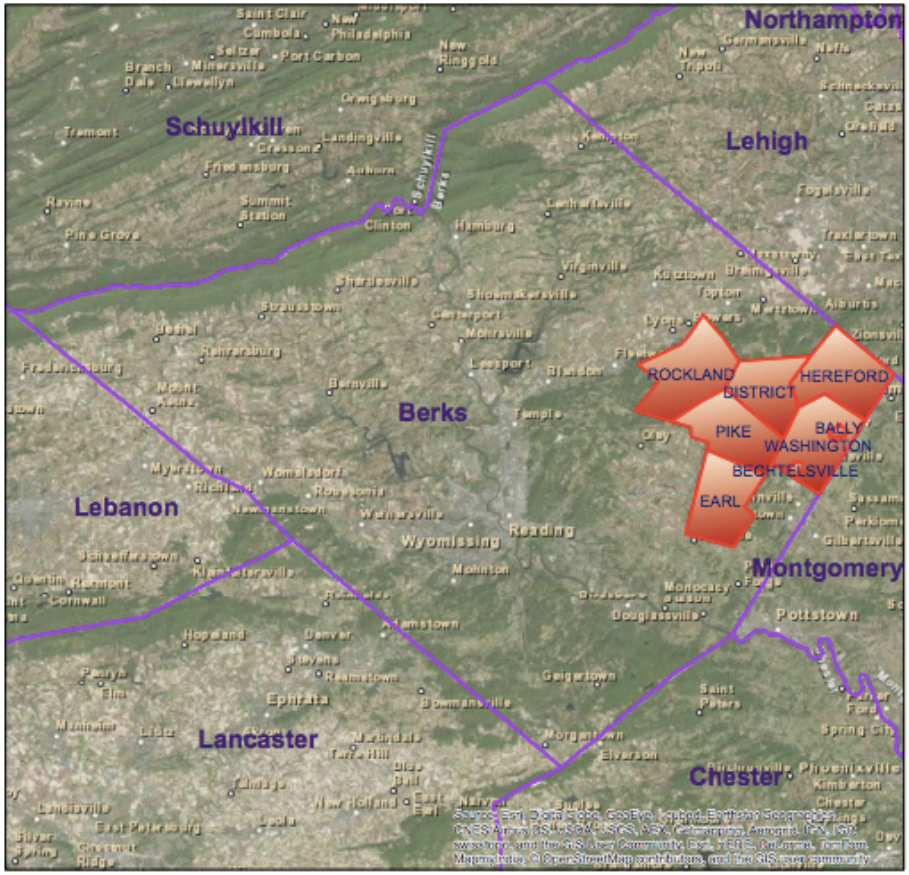
Spotted Lanternfly Quarantine Map

Townships Under Quarantine As of December 13, 2014



Legend

- Township Under PDA Quarantine
- Pennsylvania County Border

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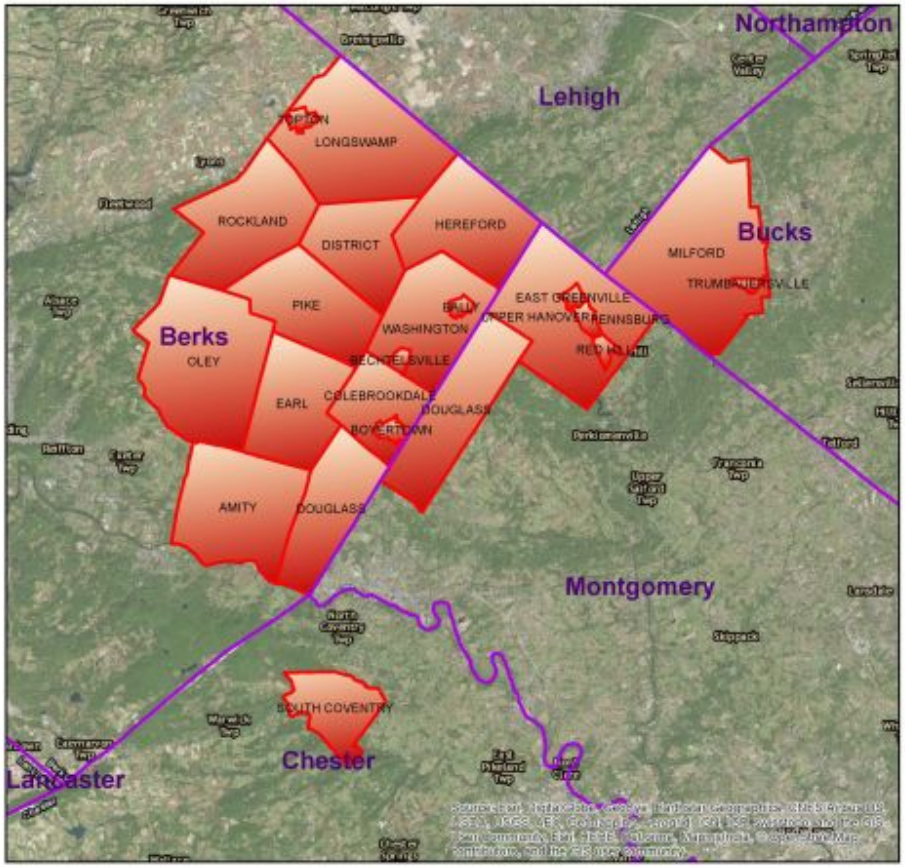
Spotted Lanternfly Quarantine Map

Townships Under Quarantine As of Nov 23, 2015



Legend

- Pennsylvania County Border
- PDA Quarantine

pennsylvania
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Spotted lanternfly: cage studies on grape in PA

New invasive pests

Spotted wing Drosophila

Brown marmorated stink bug

Injury by SWD on grapes

Adult SWD on pinot noire

Monitoring spotted wing Drosophila

- Critical: is this pest present on farm?
- Use bait traps to monitor adult flies

- Use salt test to monitor larvae in fruit

Baits to trap adult flies?

- Attractants
  - Fermenting matter
  - Apple cider vinegar
  - Wine vinegar
  - Yeast dough
- Differences?
  - Earliest catch?
  - Fewest non-targets?

Bait traps

- **Apple cider vinegar (2012-13)**
  + a drop of dish soap

- **Fermenting bait (2014)**
  - **Mix: Yeast (1/4 tsp active dry)**
    Sugar (1/2 tsp)
    Flour (2 Tbsp)
    Water (4 tsp)
  - **Put in 4-oz cup with mesh cover**
  - **Float cup on apple cider vinegar in jar trap**

- **Commercial bait (2015)**

SWD Traps, 2015

- New commercial lure
- Made by Trécé
- @ $3.00
- Lasts 7 weeks
- Hang in quart container
- Drowning solution:
  - water or 50% ethanol or 50% cider
- Hope for earlier catch

Using traps in fruit crops

- Hang in canopy, near fruit clusters
- On shady side
- 1-2 weeks prior to fruit ripening
- Holes facing outward

Trap Deployment Basic Rules

- **Minimum: 2 traps per crop**
  - **1 in interior**
  - **1 at field edge**
  - **Reduce to 1 trap after 1st detect**
- **Trécé recommendation:**
  - **5-6 traps per 10 A of berries**
  - **3-4 traps per 40 A of tree fruit**

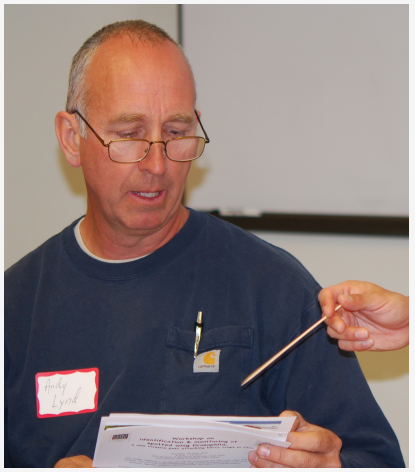
Trap, then identify

- Threshold: a single SWD adult
- Need to separate:
  - Suspected SWD
  - All others
- Equipment:
  - Minimal: 30x magnifying lens
  - Better: Dissecting microscope

SWD outreach

When?	What?	Where?
Late April 2013	workshop	Columbus
Late April 2014	workshop	Columbus
Early May 2015	webinar	-
Late May 2015	workshop	Wooster
Early April 2016	**workshop**	**Southern OH**



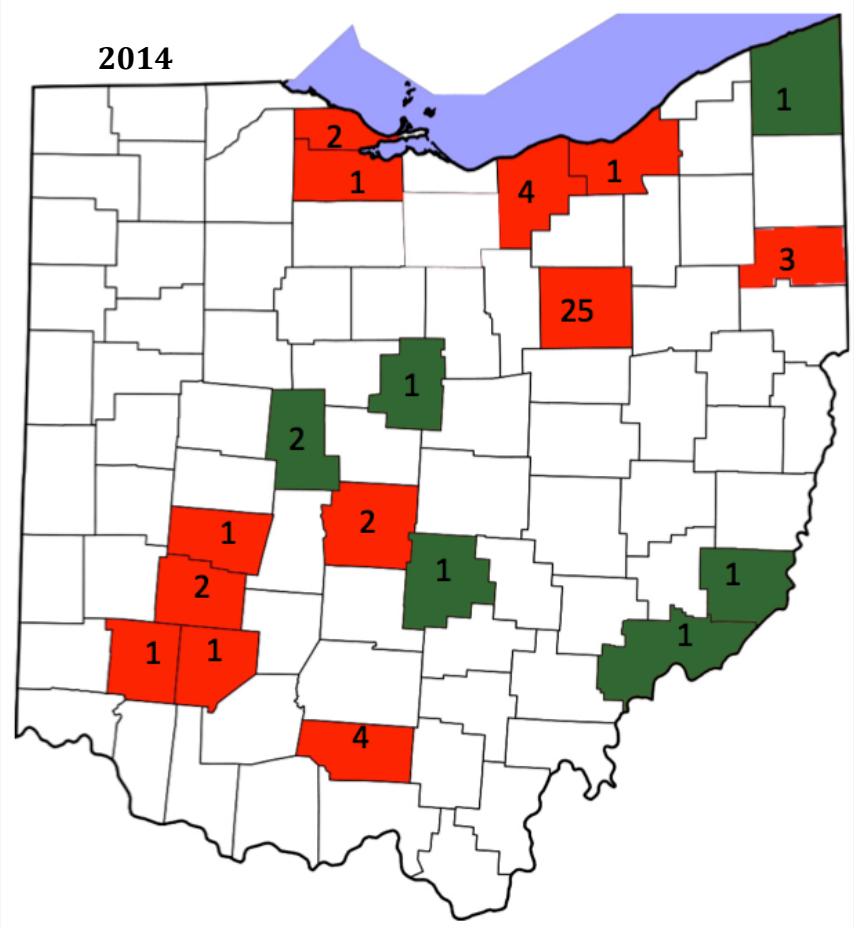


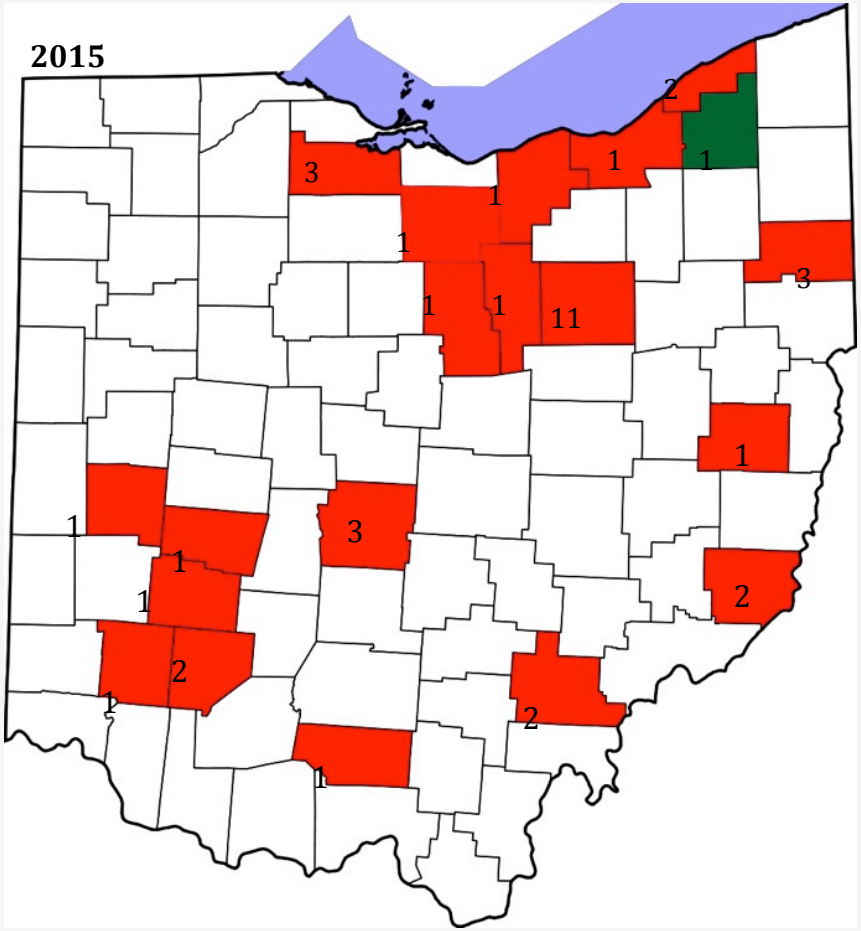
SWD trap network, 2015

- 41 sites
- 20 Ohio counties
- 1 – 4 traps/site
- By 14 Extension Educators
- trap counts on website

  u.osu.edu/pestmanagement

SWD Range in Ohio





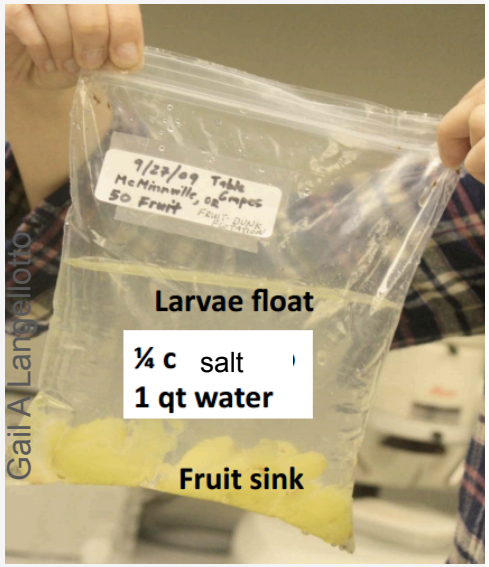
Red: SWD found

Green: not found

Number = # traps

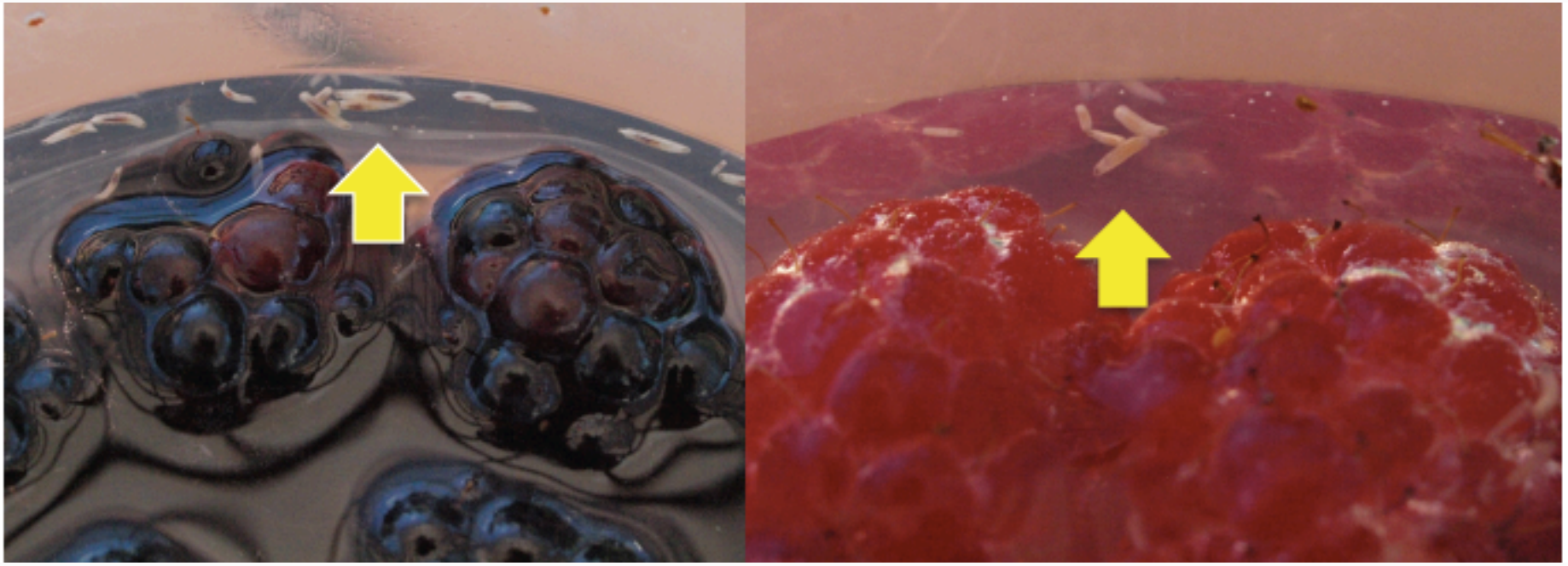
1st detect: 14 June – 23 August

Test fruit for SWD larvae with salt test



- Put fruit in bag or jar
- Add warm water + salt
- Examine top surface in 15 minutes
- Larvae will float

Salt test



Salt test: proportions

Salt	Warm water
1 Tablespoon	1 cup
¼ cup	1 quart (4 cups)
1 cup	1 gallon

Approach to SWD Monitoring

	Traps	Salt Test
Before 1st SWD detected	**Check weekly and sort sample within 24 hrs (5-10 min/trap)** **Report findings, even if 0**	**No Ripe fruit – No Test** **Ripe fruit – Test Optional**

Approach to SWD Monitoring

	Traps	Salt Test
Before 1st SWD detected	**Check weekly and sort sample within 24 hrs (5-10 min/trap)** **Report findings, even if 0**	**No Ripe fruit – No Test** **Ripe fruit – Test Optional**
After 1st SWD detected	**Optional: Check weekly, keep samples, no need to sort for SWD**	**Weekly, best 1-2 days prior to insecticide spray**

Non-chemical management

- Prompt harvest as soon as ripe
- Chill fruit as soon as harvested
  - Kills eggs & young larvae
  - 8 days at 33 – 34 °F
- Sanitation
  - Strongly recommended!
  - Destroy ALL leftover fruit
  - Do every 2 days
  - Culls in clear plastic bags in sun, 1 week

Non-chemical management

Removal of nearby wild hosts

- Wild blackberry
- Pokeweed
- Mock strawberry
- Tartarian honeysuckle
- Bush honeysuckle
- Silky dogwood
- Persimmon
- Rose hips

Insecticides for SWD on grapes

Product	*PHI* *(days)*	*Limit* *(if used at max rate)*	*Residual* *(days)*
MustangMaxx	**1**	**6 ap.**	**7-10**
Assail	**3**	**2 ap.**	**1-3**
Malathion	**3**	**2 ap.**	**5-7**
Baythroid	**3**	**4 ap.**	**7-10**
Delegate	**7**	**4 ap.**	**5-7**
Entrust [OMRI]	**7**	**3 ap.**	**3-5**
Sevin	**7**	**5 ap.**	**7-10**
Imidan	**7/14**	**3 ap.**	**7**
Danitol	21	2 ap.	7-10
Brigade, Hero	30	1 ap.	7-10

Brown marmorated stink bug


adult


nymph

- Attacks fruits & seed pods
- Invading Ohio since 2007

Brown marmorated stink bug: injury on grapes & berries

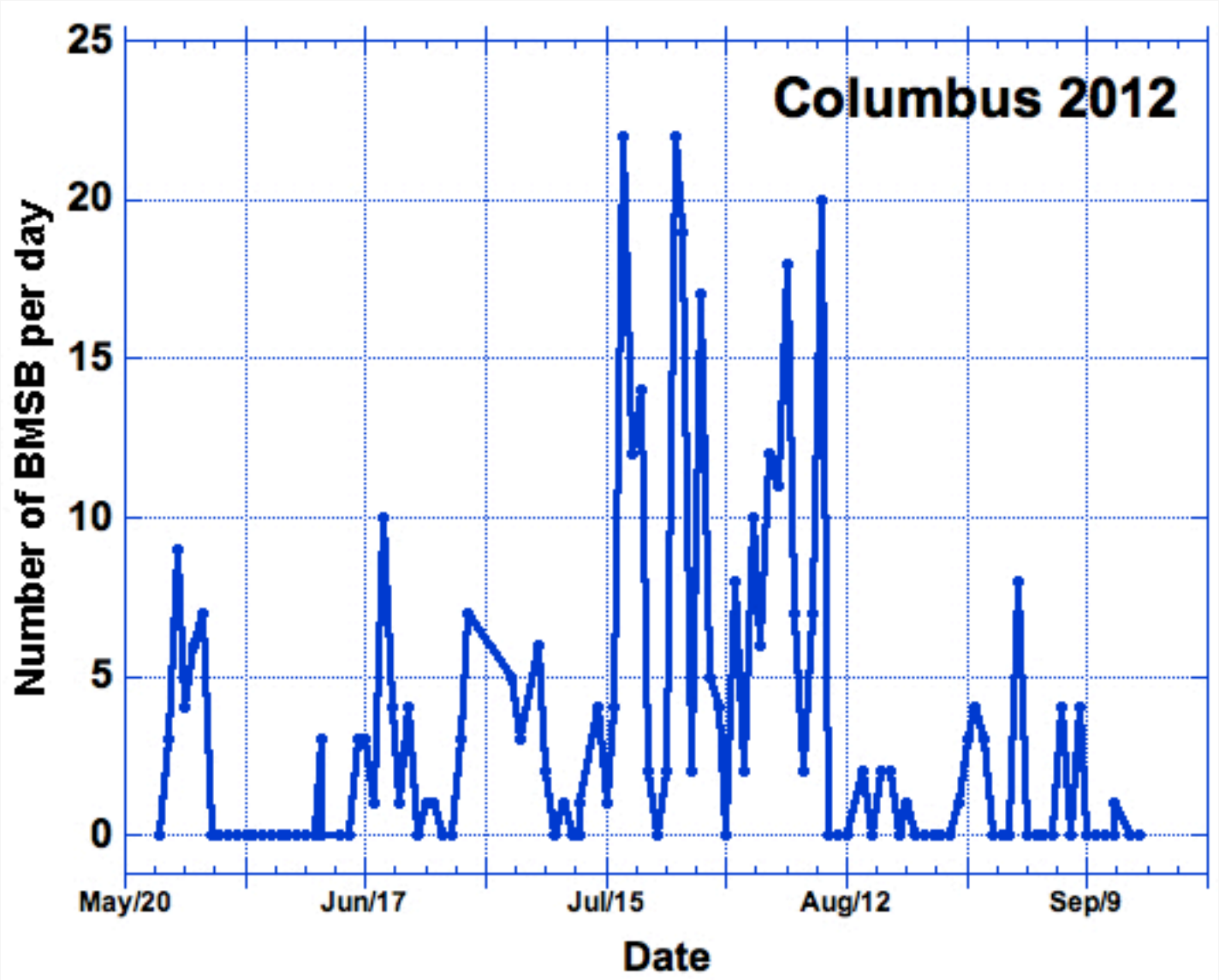
Monitoring BMSB

- Improved lure by USDA-ARS
- Double lure for synergy
  - ARS#20 (10 mg)
  - MDT (66 mg)
- Available from several companies
  - AgBio
  - Alpha Scents
  - Rescue
  - Trécé
  - Scentry
  - Bedoukian

Stink bug trapping study

- Pyramid *vs* pipe
- Black *vs* yellow; plain *vs* netted

BMSB daily catch in blacklight trap



Insecticides for stink bugs on grapes

group	*Product*	*PHI (days)*	*Limit (if used at max rate)*
neonicotinoids	Belay	0	2 ap.
	Venom/Scorpion	1	2 ap.
	Assail	3	2 ap.
	Actara	5	2 ap.
pyrethroids	Mustang Maxx	1	6 ap.
	Baythroid	3	4 ap.
	Danitol	21	2 ap.
	Brigade	30	1 ap.

Problem…

- **Pyrethroid use can flare secondary pests such as mealybugs & mites**

Survey of grape pest problems

- To help new entomologist!
- Dr Elizabeth Long
- New faculty member
- Based at Wooster
- 1º research

the end



Info on fruit & veg. pests
u.osu.edu/pestmanagement

Questions?

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