

# 4.1 Economics



**PennState**

## Funding



United States  
Department of  
Agriculture

National Institute  
of Food and  
Agriculture

Specialty Crop Research Initiative  
Grant #2011-01413-30937

## Collaborating Institutions



Cornell University



UNIVERSITY OF  
MARYLAND



Virginia Tech



# Economic Evaluation Team Report- 2015

Jayson K. Harper

Professor of Agricultural Economics

Penn State University

## Objectives of the economic evaluation:

- 1) assess the impact of BMSB on specific commodities
- 2) estimate the cost of BMSB control strategies
- 3) project the cost and potential benefits of proposed management strategies

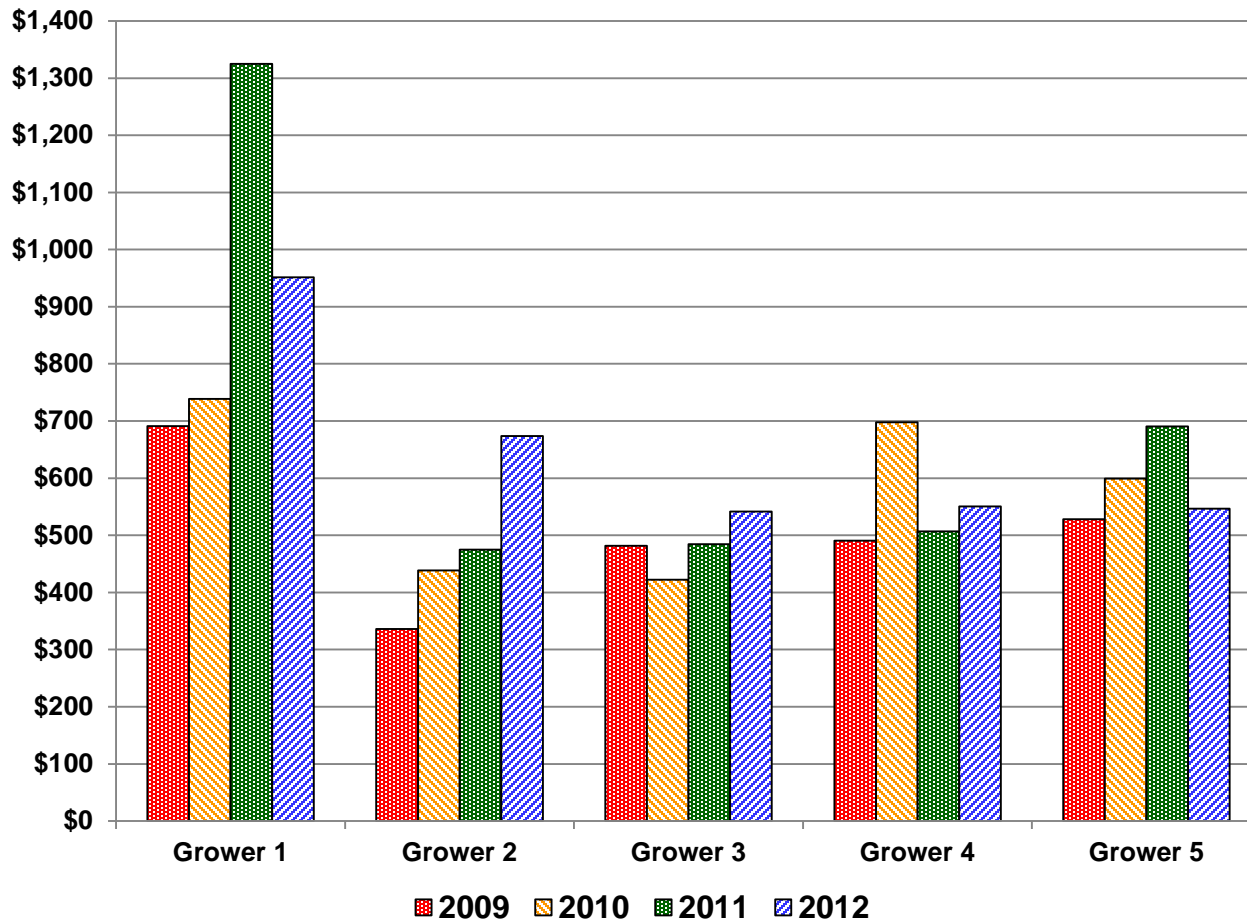
Economic information can be useful for:

- prioritizing research and extension efforts for individual commodities
- encouraging producer adoption of new control tactics
- informing policymakers of the economic impact of this pest

# Evaluating the Economic Impact of BMSB

- For individual crops, have looked at how has BMSB has changed the use of insecticides (type of materials and number of applications)
  - Spray record data
- Impact of changes in quality (and marketable yield) can also be incorporated into the analysis (when available)
- Can help estimate the cost and benefit of new BMSB management techniques as they are developed

# Impact of BMSB on Insecticide Costs for Apple Growers in WV and MD



**2009 – Pre-BMSB (BMSB had not yet become an issue for growers)**

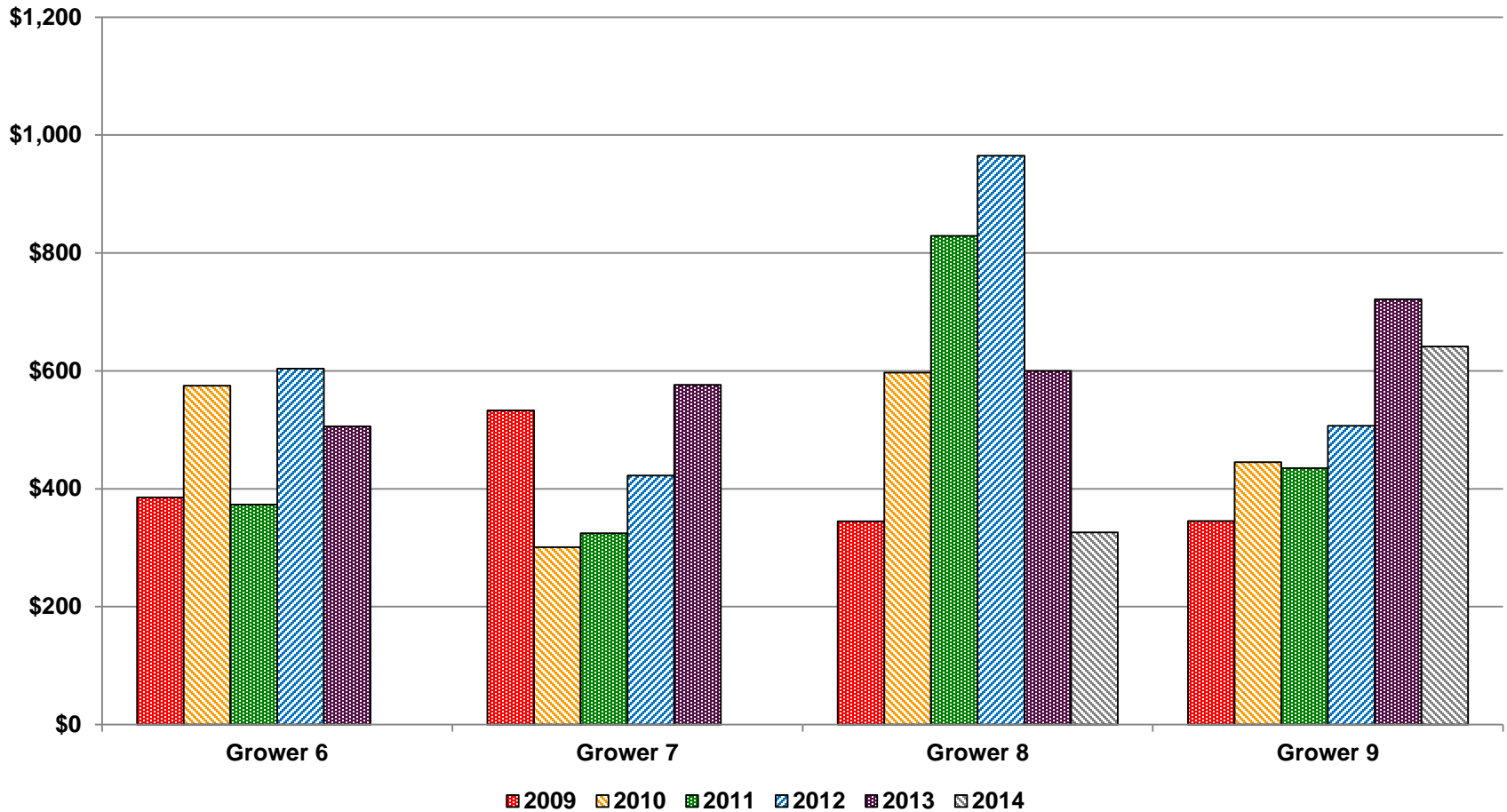
**2010 – BMSB outbreak year, but no recommendations available (season-long problems for growers)**

**2011 – BMSB recommendations being developed and communicated (high populations in early season, but crash in the late season)**

**2012 – BMSB recommendations being developed and communicated (low populations in the early season, but high populations late)**

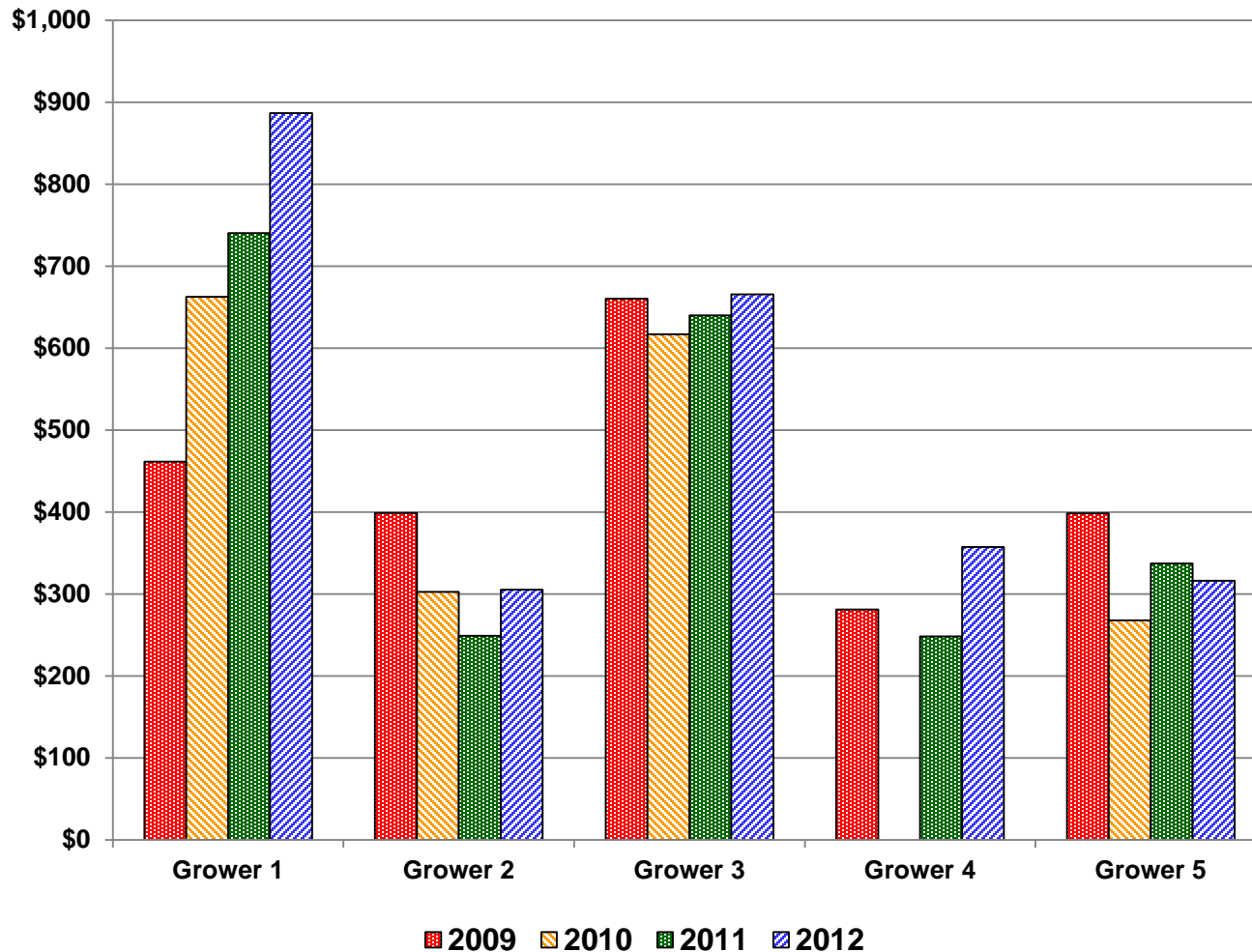
Spray records provided by Tracy Leskey, USDA-ARS

# Impact of BMSB on Insecticide Costs for Apple Growers in NJ and PA



Spray records provided by of Tracy Leskey, USDA-ARS, Greg Krawczyk, Penn State Univ., and Dean Polk, Rutgers Univ.

# Impact of BMSB on Insecticide Costs for Peach Growers in WV and MD



**2009 – Pre-BMSB (BMSB had not yet become an issue for growers)**

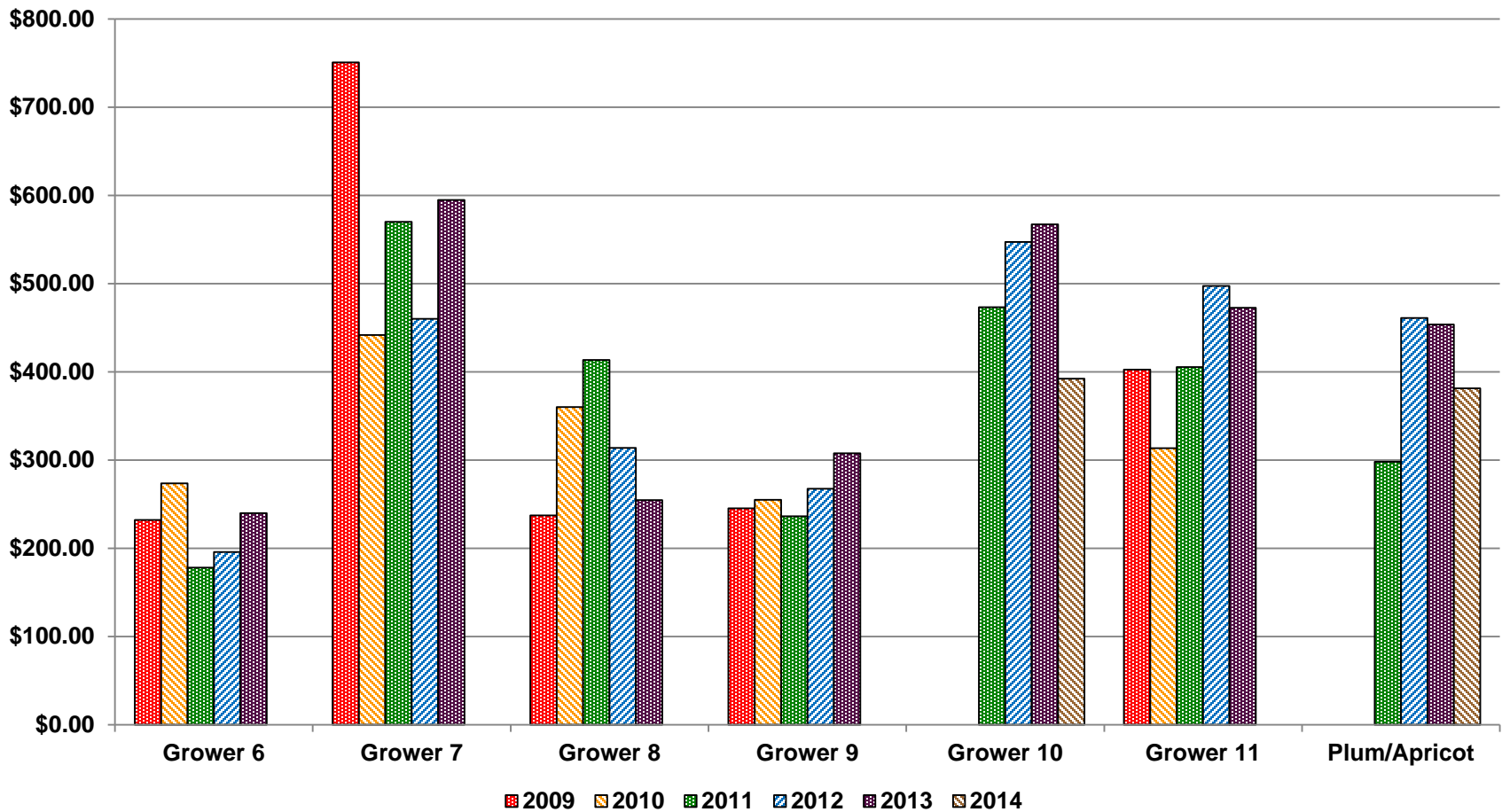
**2010 – BMSB outbreak year, but no recommendations available (season-long problems for growers)**

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**2012 – BMSB recommendations being developed and communicated (low populations in the early season, but high populations late)**

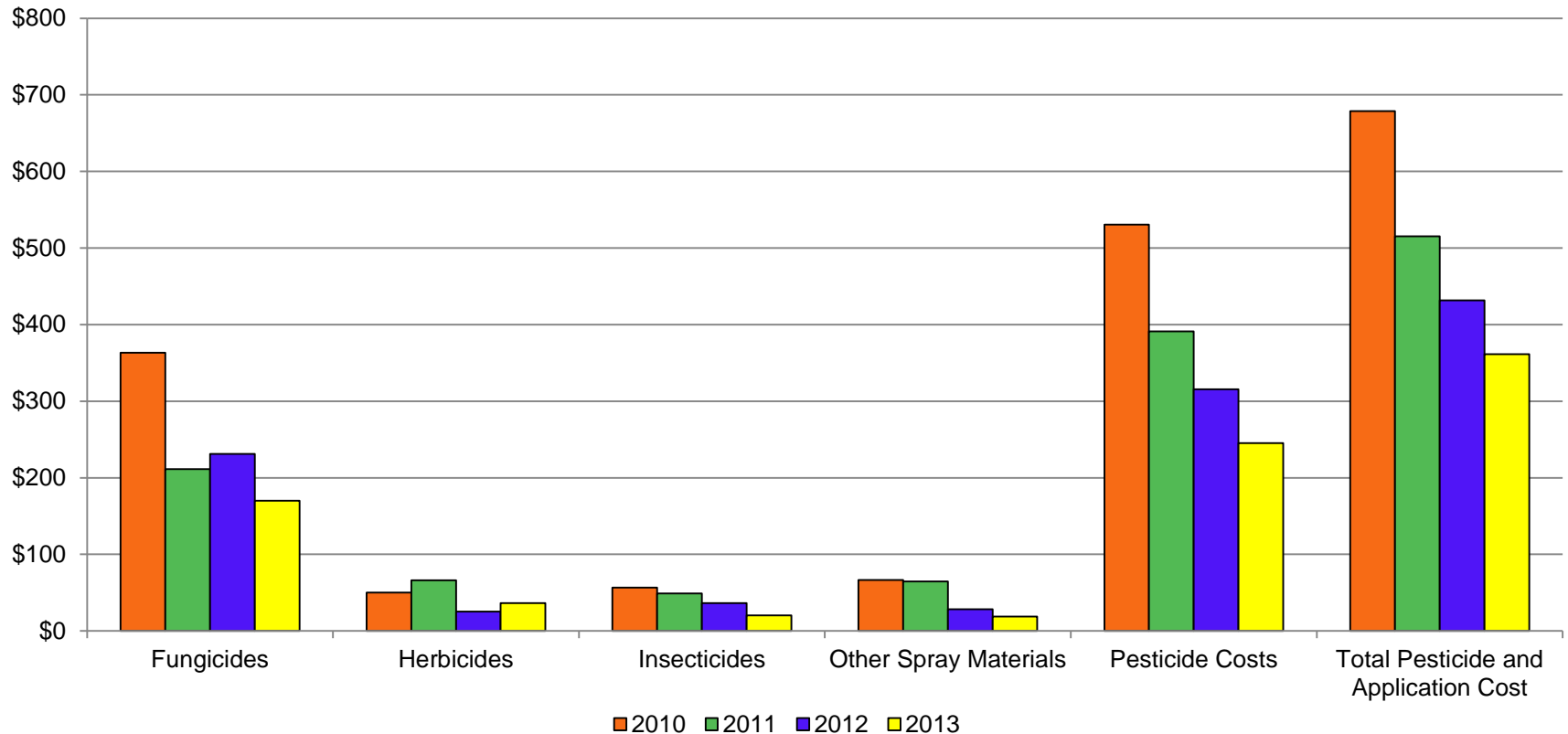
Spray records provided by Tracy Leskey, USDA-ARS

# Impact of BMSB on Insecticide Costs for Stone Fruit Growers in NJ and PA



Spray records provided by of Tracy Leskey, USDA-ARS, Greg Krawczyk, Penn State Univ., and Dean Polk, Rutgers Univ.

# Processing Tomatoes in central Pennsylvania



**Data from: 9 growers in 2010, 11 growers in 2011, 28 growers in 2012, and 11 growers in 2013**

**Spray records provided by of Furmano Foods, Northumberland, PA**



# Cost of BMSB Spray Options

- Idea started with publications by Welty and Lewis, et al.
  - Insecticide PHI by crop
  - Insecticide efficacy by crop
- Developed an Excel spreadsheet to estimate the cost of BMSB spray options by crop (field crops, vegetables, and fruit)
  - Label rates
  - Cost range (default price list can be adjusted by user)
  - PHI
  - IRAC mode of action
  - Efficacy
- Plan to make it available in early Spring 2016
  - Update insecticide prices
  - Recheck insecticide labels
  - Fine tune efficacy

Insecticide products registered for use for control of stink bugs in general, or brown marmorated stink bug in particular

white background	Federal Section 3 label includes crop and stink bug (parentheses if suppression only)
blue background	Federal Section 3 supplemental label includes crop and stink bug
grey background	Federal Section 3 label includes crop but does not list stink bug
yellow background	State 2(ee) label includes brown marmorated stink bug
red striped background	Not registered for use on this crop

Table 1. Vegetable crops

Product (active ingredient)	Pre-harvest interval					
	Tomato	Pepper	Eggplant	Sweet corn	Snap Beans	Swiss chard
Acephate STUP (acephate)	7 days	7 days	14 days	7 days	7 days	7 days
Actara (thiamethoxam)	0 days	0 days	0 days	7 days	7 days	7 days
Assail (acetamiprid)	7 days	7 days	7 days	0 days	7 days	7 days
Baythroid XL (cyfluthrin)	0 days	0 days	0 days	0 days	0 days	0 days
Belay (clothianidin)	21 days	21 days	21 days	1 day	1 day	21 days
( Brigade (bifenthrin)	1 day	7 days	7 days	1 day	3 days	3 days
( Bifenure EC (bifenthrin)	1 day	7 days	7 days	1 day	3 days	3 days
Danitol 24EC (neopogathrin)	3 days	3 days	3 days	3 days	3 days	3 days
Delta Gold (deltamethrin)	1 day	1 day	1 day	24 hour	1 day	1 day
Lannate LV, SP (methomyl)	1 day	3 days	5 days	0 days	3 days	10 days
Mustang Max (zeta-cypermethrin)	1 day	1 day	1 day	3 days	1 day	1 day
PennCap-M (methy parathion)	12 days	12 days	12 days	12 days	12 days	12 days
permethrin (Ambush, Arctic, etc.)	0 days	3 days	3 days	1 day	1 day	1 day
Proaxis (gamma-cyhalothrin)	5 days	5 days	5 days	1 day	7 days	7 days
Rimon (novaluron)	1 day	1 day	1 day	2 days	1 day	1 day
Sevin (carbaryl)	(3 days)	(3 days)	(3 days)	2 days	(3 days)	14 days
Thionex 3EC (endosulfan)	4 days	4 days	17 days	17 days	3 days	14 days
( Vemton 705G (dinotefuran)	1 day	1 day	1 day	7 days	7 days	7 days
( Scorpion (dinotefuran)	1 day	1 day	1 day	7 days	7 days	7 days
Vydale L (oxamyl)	3 days	7 days	1 day	1 day	1 day	1 day
Warrior II (lambda-cyhalothrin)	5 days	5 days	5 days	1 day	7 days	7 days

Table 2. Fruit crops

Product (active ingredient)	Raspberry	Grape	Strawberry	Blueberry	Apple, pear	Peach
	Actara (thiamethoxam)	3 days	5 days	3 days	3 days	14 or 35 days
Assail (acetamiprid)	1 day	3 days	1 day	1 day	7 days	7 days
Baythroid XL (beta-cyfluthrin)	3 days	3 days	1 day	1 day	7 days	7 days
Belay (clothianidin)	0 days	0 days	0 days	0 days	7 days	21 days
( Brigade 2EC or 10WSB (bifenthrin)	3 days	30 days	0 days	1 day	14 d (pear only)	14 days
( Bifenure 2EC or 10DF (bifenthrin)	3 days	30 days	0 days	1 day	14 d (pear only)	14 days
Carzol (formetanate hydrochloride)	Not after petal-fall	Not after petal-fall	Not after petal-fall	Not after petal-fall	Not after petal-fall	Not after petal-fall
Danitol 24EC (neopogathrin)	3 days	21 days	2 days	3 days	14 days	3 days
Delta Gold (deltamethrin)	21 days	21 days	21 days	21 days	21 days	21 days
Lannate LV, SP (methomyl)	3 days	3 days	3 days	3 days	14 d apple, 7 d pear	4 days
Malathion (malathion)	1 day	3 days	3 days	1 day	14 days	7 days
Mustang Max (zeta-cypermethrin)	1 day	1 day	1 day	1 day	14 days	14 days
permethrin (Ambush, Arctic, etc.)	0 days	0 days	0 days	0 days	Not after petal-fall	14 days
Proaxis (gamma-cyhalothrin)	1 day	1 day	1 day	1 day	21 days	14 days
Rimon (novaluron)	1 day	1 day	1 day	8 days	14 day (apple only)	8 days
Sevin (carbaryl)	7 days	7 days	7 days	7 days	3 days	3 days
Thionex 3EC (endosulfan)	4 days	4 days	17 days	17 days	21 days	14 days
( Vemton 705G (dinotefuran)	1 day	1 day	1 day	7 days	7 days	7 days
( Scorpion (dinotefuran)	1 day	1 day	1 day	7 days	7 days	7 days
Vydale L (oxamyl)	3 days	7 days	1 day	1 day	1 day	1 day
Warrior II (lambda-cyhalothrin)	5 days	5 days	5 days	1 day	21 days	14 days

Celeste Welty, Extension Entomologist, Ohio State University, February 2012

Ohio State handout  
(Welty, 2012)

Brown Marmorated Stink Bug Control Options

Crop	Insecticide	Control Options															
		Control Option 1	Control Option 2	Control Option 3	Control Option 4	Control Option 5	Control Option 6	Control Option 7	Control Option 8	Control Option 9	Control Option 10	Control Option 11	Control Option 12				
Field Crops	Actara	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Assail	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Baythroid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Belay	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Brigade	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Bifenure	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Vegetable Crops	Actara	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Assail	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Baythroid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Belay	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Brigade	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Bifenure	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Danitol	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Delta Gold	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Lannate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Mustang Max	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	PennCap-M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	permethrin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Proaxis	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Rimon	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Sevin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Thionex 3EC	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Vemton	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Scorpion	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Vydale L	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Warrior II	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	

an excellent control  
of green stink bug  
in the eastern  
US  
see references  
Baiting based on better number of 1st and green house trials. 3rd instars may be more effective after the 2011 field season.  
Tobacco usually used higher rates of insecticides and at the higher plantages/leaves.

University of  
Maryland publication  
(Lewis, Dively, Hooks, and  
Brust, 2011)

# Cornell Apple Insecticide Selection Tool

Trade Name	Active ingredient	unit	Default Price per unit	Your price per unit	Price to use for analysis	Reduced Risk/Low Impact?	OP?
Acramite 50WS	bifenazate	lb	\$65.98	\$0.00	\$65.98	N	N
Actara 25WDG	thiamethoxam	oz	\$3.42	\$0.00	\$3.42	Y	N
Admire Pro 4.6SC	imidacloprid	oz	\$2.68	\$0.00	\$2.68	N	N
Agree 3.8WS	<i>Bacillus thuringiensis</i>	lb	\$13.00	\$0.00	\$13.00	Y	N
Agri-Flex SC	abamectin/thiamethoxam	oz	\$3.84	\$0.00	\$3.84	N	N
Agri-Mek 8SC	abamectin	oz	\$4.55	\$0.00	\$4.55	N	N
Altacor 35WDG	chlorantranilprole	pt	\$12.50	\$0.00	\$12.50	Y	N
Ambush 25WP	permethrin	oz	\$0.45	\$0.00	\$0.45	N	N
Apollo 4SC	clofentezine	oz	\$5.40	\$0.00	\$5.40	Y	N
Asana XL 0.66EC	esfenvalerate	oz	\$0.56	\$0.00	\$0.56	N	N
Assail 30SG	acetamiprid	oz	\$4.61	\$0.00	\$4.61	Y	N
Avaunt 30WDG	indoxacarb	oz	\$6.35	\$0.00	\$6.35	Y	N
Aza-Direct 1.2L	azadirachtin	oz	\$1.65	\$0.00	\$1.65	Y	N
Azatin XL 0.27EC	azadirachtin	oz	\$3.00	\$0.00	\$3.00	Y	N
Baythroid XL 1EC	cyfluthrin	oz	\$1.37	\$0.00	\$1.37	N	N
Beleaf 50SG	flonicamid	oz	\$10.05	\$0.00	\$10.05	Y	N
Belt 4SC	flubendiamide	oz	\$6.73	\$0.00	\$6.73	Y	N
Biobit XL 2.1FC	<i>Bacillus thuringiensis</i>	lb	\$12.75	\$0.00	\$12.75	Y	N
Calypto 4F	thiacloprid	oz	\$5.26	\$0.00	\$5.26	Y	N
Carpovirusine 0.99SC	granulosis virus	qt	\$277.00	\$0.00	\$277.00	Y	N
Centaur 0.7WDG	buprofezin	oz	\$2.43	\$0.00	\$2.43	Y	N

Pesticide list goes on for 75 lines...

# BMSB Insecticide Selection Tool

<b>Click boxes:</b>	<b>BMSB management scenarios evaluated:</b>	<b>Application Rate:</b>
<b>Instructions</b>	1) Least expensive option for PHI	<input type="radio"/> Low
<b>CALCULATE RESULTS</b>	2) Least expensive option for PHI with a different IRAC	<input checked="" type="radio"/> Mid
	3) Least expensive option for PHI with highest efficacy level	<input type="radio"/> High
	4) Least expensive option for PHI with highest efficacy level and different IRAC	<b>Pre-harvest interval:</b> 14

<u>Trade Name</u>	<u>Active ingredient</u>	<u>unit</u>	<u>Default Price per unit</u>	<u>Your price per unit</u>	<u>Price to use for per unit</u>
<b>Actara</b>	thiamethoxam	oz.	\$3.35	<b>\$0.00</b>	<b>\$3.35</b>
<b>Admire Pro</b>	imidacloprid	oz.	\$1.08	<b>\$0.00</b>	<b>\$1.08</b>
<b>Agri-Mek 1.5</b>	abamectin	oz.	\$2.06	<b>\$0.00</b>	<b>\$2.06</b>
<b>Altacor</b>	chlorantraniliprole	oz.	\$10.90	<b>\$0.00</b>	<b>\$10.90</b>
<b>Ambush</b>	permethrin	oz.	\$0.35	<b>\$0.00</b>	<b>\$0.35</b>
<b>Asana XL</b>	esfenvalerate	oz.	\$0.43	<b>\$0.00</b>	<b>\$0.43</b>
<b>Assail</b>	acetamiprid	oz.	\$4.28	<b>\$0.00</b>	<b>\$4.28</b>
<b>Avaunt</b>	indoxacarb	oz.	\$5.31	<b>\$0.00</b>	<b>\$5.31</b>
<b>Aza-Direct</b>	azadirachtin	oz.	\$1.74	<b>\$0.00</b>	<b>\$1.74</b>
<b>Baythroid</b>	beta-cyfluthrin	oz.	\$1.09	<b>\$0.00</b>	<b>\$1.09</b>
<b>Belay</b>	clothianidin	oz.	\$2.17	<b>\$0.00</b>	<b>\$2.17</b>

55 insecticides listed...

Mid-point rate, 14 day PHI	Least expensive option					Least expensive option, different IRAC					Least expensive option, highest efficacy					Least expensive option, highest efficacy different IRAC				
	Insecticide	Cost/A	PHI	Efficacy	IRAC	Insecticide	Cost/A	PHI	Efficacy	IRAC	Insecticide	Cost/A	PHI	Efficacy	IRAC	Insecticide	Cost/A	PHI	Efficacy	
alfalfa	Baythroid	\$1.96	7	2	3	Dimethoate	\$4.56	3	4	1	Lannate SP	\$20.12	7	1	1	Baythroid	\$ 1.96	7	2	
barley	Mustang	\$3.64	14	3	3	Malathion 5EC	\$7.44	7	4	1	Lannate SP	\$10.06	1	1	1	Mustang	\$ 3.64	14	3	
corn	Malathion 5EC	\$7.44	7	4	1	Coragen	\$27.97	14	3	28	Coragen	\$27.97	14	3	28	Malathion 5EC	\$ 7.44	7	4	
grass hay	Baythroid	\$2.40	0	2	3	Malathion 5EC	\$9.92	0	4	1	Baythroid	\$2.40	0	2	3	Sevin XLR	\$ 15.60	14	3	
sorghum, grain	Baythroid	\$2.07	14	2	3	Malathion 5EC	\$7.44	7	4	1	Lannate SP	\$10.06	14	1	1	Baythroid	\$ 2.07	14	2	
soybeans	Orthene	\$5.84	14	3	1	Intrepid	\$9.96	14	4	18	Lannate SP	\$8.38	14	1	1	Coragen	\$ 27.97	1	3	
tobacco	Admire Pro	\$1.51	14	2	4	Thionex 3EC	\$2.47	10	1	2	Thionex 3EC	\$2.47	10	1	2	Belay	\$ 7.60	14	1	
wheat	Mustang	\$3.64	14	3	3	Malathion 5EC	\$6.20	7	4	1	Lannate SP	\$10.06	7	1	1	Mustang	\$ 3.64	14	3	
asparagus	Ambush	\$1.68	1	3	3	Malathion 5EC	\$8.68	1	4	1	Assail	\$16.69	1	1	4	Lannate SP	\$ 20.12	1	1	
beans, lima	Admire Pro	\$1.30	7	2	4	Baythroid	\$2.18	7	2	3	Leverage	\$5.15	7	1	3	Lannate SP	\$ 20.12	1	1	
beans, snap	Admire Pro	\$1.30	7	2	4	Brigade	\$2.42	14	3	3	Leverage	\$5.15	7	1	3	Lannate SP	\$ 20.12	1	1	
beets	Admire Pro	\$1.30	7	2	4	Brigade	\$3.28	1	3	3	Actara	\$16.75	7	1	4	Lannate SP	\$ 16.76	0	1	
broccoli	Admire Pro	\$1.40	7	2	4	Ambush	\$1.68	1	3	3	Endigo	\$5.10	1	1	3	Lannate SP	\$ 16.76	3	1	
brussel sprouts	Admire Pro	\$1.40	7	2	4	Ambush	\$1.68	1	3	3	Endigo	\$5.10	1	1	3	Lannate SP	\$ 20.12	3	1	
cabbage	Admire Pro	\$1.40	7	2	4	Baythroid	\$1.74	0	2	3	Endigo	\$5.10	1	1	3	Lannate SP	\$ 16.76	1	1	
carrots	Admire Pro	\$1.30	7	2	4	Baythroid	\$2.40	0	2	3	Leverage	\$5.15	7	1	3	Lannate SP	\$ 16.76	1	1	
cauliflower	Admire Pro	\$1.40	7	2	4	Ambush	\$1.68	1	3	3	Endigo	\$5.10	1	1	3	Lannate SP	\$ 16.76	3	1	
celery	Baythroid	\$2.18	0	2	3	Dimethoate	\$6.08	10	4	1	Belay	\$7.60	7	1	4	Lannate SP	\$ 16.76	7	1	
collards	Admire Pro	\$1.40	7	2	4	Dimethoate	\$3.04	14	4	1	Leverage	\$5.52	7	1	3	Lannate SP	\$ 20.12	10	1	
cucumber	Baythroid	\$1.96	0	2	3	Thionex 3EC	\$3.68	11	1	2	Thionex 3EC	\$3.68	11	1	2	Endigo	\$ 5.10	1	1	
eggplant	Admire Pro	\$1.89	0	2	4	Baythroid	\$2.40	0	2	3	Endigo	\$5.10	5	1	3	Lannate SP	\$ 16.76	5	1	
garlic	Mustang	\$3.15	7	3	3	Malathion 5EC	\$9.92	3	4	1	Lannate SP	\$13.41	7	1	1	Assail	\$ 27.82	7	1	
gourds	Warrior II	\$3.46	1	2	3	Intrepid	\$11.62	3	4	18	Endigo	\$5.10	1	1	3	Coragen	\$ 34.55	1	3	
greens, mustard/turnip	Admire Pro	\$1.40	7	2	4	Baythroid	\$1.74	0	2	3	Leverage	\$5.52	7	1	3	Lannate SP	\$ 20.12	10	1	
horseradish	Admire Pro	\$1.30	7	2	4	Mustang	\$3.64	1	3	3	Actara	\$16.75	7	1	4	Lannate SP	\$ 20.12	10	1	
kale	Admire Pro	\$1.40	7	2	4	Baythroid	\$1.74	0	2	3	Leverage	\$5.52	7	1	3	Lannate SP	\$ 20.12	10	1	
leeks	Malathion 5EC	\$9.92	3	4	1	Actara	\$16.75	3	1	4	Actara	\$16.75	3	1	4	Coragen	\$ 27.97	1	3	
lettuce	Admire Pro	\$1.40	7	2	4	Ambush	\$2.24	1	3	3	Thionex 3EC	\$4.29	14	1	2	Endigo	\$ 5.10	7	1	

Mid-point rate, 14 day PHI	Least expensive option					Least expensive option, different IRAC					Least expensive option, highest efficacy					Least expensive option, highest efficacy different IRAC				
	Insecticide	Cost/A	PHI	Efficacy	IRAC	Insecticide	Cost/A	PHI	Efficacy	IRAC	Insecticide	Cost/A	PHI	Efficacy	IRAC	Insecticide	Cost/A	PHI	Efficacy	
<b>muskmelons</b>	Baythroid	\$1.96	0	2	3	Thionex 3EC	\$3.68	4	1	2	Thionex 3EC	\$3.68	4	1	2	Endigo	\$ 5.10	1	1	
<b>okra</b>	Admire Pro	\$1.89	0	2	4	Brigade	\$2.42	7	3	3	Actara	\$16.75	3	1	4	Brigade	\$ 2.42	7	3	
<b>onions</b>	Mustang	\$3.15	7	3	3	Malathion 5EC	\$9.92	3	4	1	Lannate SP	\$20.12	7	1	1	Assail	\$ 27.82	7	1	
<b>peas</b>	Admire Pro	\$1.30	7	2	4	Baythroid	\$1.58	3	2	3	Leverage	\$5.15	7	1	3	Lannate SP	\$ 20.12	1	1	
<b>peppers</b>	Admire Pro	\$1.89	0	2	4	Baythroid	\$2.40	0	2	3	Thionex 3EC	\$3.68	4	1	2	Endigo	\$ 5.10	5	1	
<b>pumpkins</b>	Baythroid	\$1.96	0	2	3	Thionex 3EC	\$3.68	11	1	2	Thionex 3EC	\$3.68	11	1	2	Endigo	\$ 5.10	1	1	
<b>radishes</b>	Admire Pro	\$1.30	7	2	4	Baythroid	\$2.40	0	2	3	Leverage	\$5.15	7	1	3	Sevin XLR	\$ 15.60	7	3	
<b>rape</b>	Admire Pro	\$1.40	7	2	4	Baythroid	\$1.74	0	2	3	Belay	\$7.60	7	1	4	Baythroid	\$ 1.74	0	2	
<b>rutabaga</b>	Admire Pro	\$1.30	7	2	4	Malathion 5EC	\$7.44	7	4	1	Actara	\$16.75	7	1	4	Sevin XLR	\$ 15.60	14	3	
<b>spinach</b>	Admire Pro	\$1.40	7	2	4	Baythroid	\$2.18	0	2	3	Leverage	\$5.52	7	1	3	Lannate SP	\$ 20.12	7	1	
<b>summer squash</b>	Baythroid	\$1.96	0	2	3	Thionex 3EC	\$3.68	4	1	2	Thionex 3EC	\$3.68	4	1	2	Endigo	\$ 5.10	1	1	
<b>sweet corn</b>	Baythroid	\$1.96	0	2	3	Malathion 5EC	\$7.94	5	4	1	Assail	\$19.90	7	1	4	Baythroid	\$ 1.96	0	2	
<b>sweet potatoes</b>	Admire Pro	\$1.30	7	2	4	Baythroid	\$1.96	0	2	3	Endigo	\$5.10	14	1	3	Sevin XLR	\$ 18.72	7	3	
<b>tomatoes</b>	Admire Pro	\$1.89	0	2	4	Baythroid	\$2.40	0	2	3	Thionex 3EC	\$3.68	4	1	2	Endigo	\$ 5.10	5	1	
<b>watermelons</b>	Baythroid	\$1.96	0	2	3	Thionex 3EC	\$3.68	4	1	2	Thionex 3EC	\$3.68	4	1	2	Endigo	\$ 5.10	1	1	
<b>white potatoes</b>	Admire Pro	\$1.40	7	2	4	Baythroid	\$1.96	0	2	3	Thionex 3EC	\$3.68	7	1	2	Endigo	\$ 5.10	14	1	
<b>winter squash</b>	Baythroid	\$1.96	0	2	3	Thionex 3EC	\$3.68	11	1	2	Thionex 3EC	\$3.68	11	1	2	Endigo	\$ 5.10	1	1	
<b>apple</b>	Baythroid	\$2.29	7	2	3	Admire Pro	\$3.02	7	2	4	Leverage	\$4.78	7	1	3	Lannate SP	\$ 20.12	14	1	
<b>blackberry</b>	Admire Pro	\$3.02	3	2	4	Asana XL	\$3.10	7	3	3	Actara	\$10.05	3	1	4	Danitol	\$ 16.94	3	1	
<b>blueberry</b>	Admire Pro	\$2.65	3	2	4	Asana XL	\$3.10	14	3	3	Assail	\$16.69	1	1	4	Danitol	\$ 16.94	3	1	
<b>cherry</b>	Baythroid	\$2.29	7	2	3	Admire Pro	\$3.02	0	2	4	Leverage	\$4.78	7	1	3	Sevin XLR	\$ 43.68	3	3	
<b>grape</b>	Admire Pro	\$1.30	0	2	4	Baythroid	\$2.62	3	2	3	Leverage	\$5.15	3	1	3	Malathion 5EC	\$ 11.16	3	4	
<b>peach</b>	Baythroid	\$2.29	7	2	3	Admire Pro	\$3.02	0	2	4	Leverage	\$4.78	7	1	3	Lannate SP	\$ 20.12	4	1	
<b>pear</b>	Baythroid	\$2.29	7	2	3	Admire Pro	\$3.02	7	2	4	Leverage	\$4.78	7	1	3	Thionex 3EC	\$ 9.81	7	1	
<b>plum</b>	Baythroid	\$2.29	7	2	3	Admire Pro	\$3.02	0	2	4	Leverage	\$4.78	7	1	3	Sevin XLR	\$ 43.68	3	3	
<b>raspberry</b>	Admire Pro	\$3.02	3	2	4	Asana XL	\$3.10	7	3	3	Actara	\$10.05	3	1	4	Danitol	\$ 16.94	3	1	
<b>strawberry</b>	Admire Pro	\$1.40	7	2	4	Thionex 3EC	\$4.89	7	1	2	Thionex 3EC	\$4.89	7	1	2	Danitol	\$ 20.32	2	1	

Name: \_\_\_\_\_

Title: \_\_\_\_\_

- 1) I use a \_\_\_\_\_ point scale for assigning efficacy values.
- 2) Describe the scale you are using (examples: “3 = excellent, 2 = good, 1 = fair” or “1 = best, 2 = good, 3 = fair, 4 = slight, 5 = none”, “E = excellent, G = good, F = fair, P = poor”)

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## Efficacy of insecticides vs. BMSB?

- 3) Please assign an efficacy value (or range of values) for each of the following insecticides versus brown marmorated stink bugs (BMSB). You can skip any insecticides with which you are unfamiliar or for crops outside your expertise.

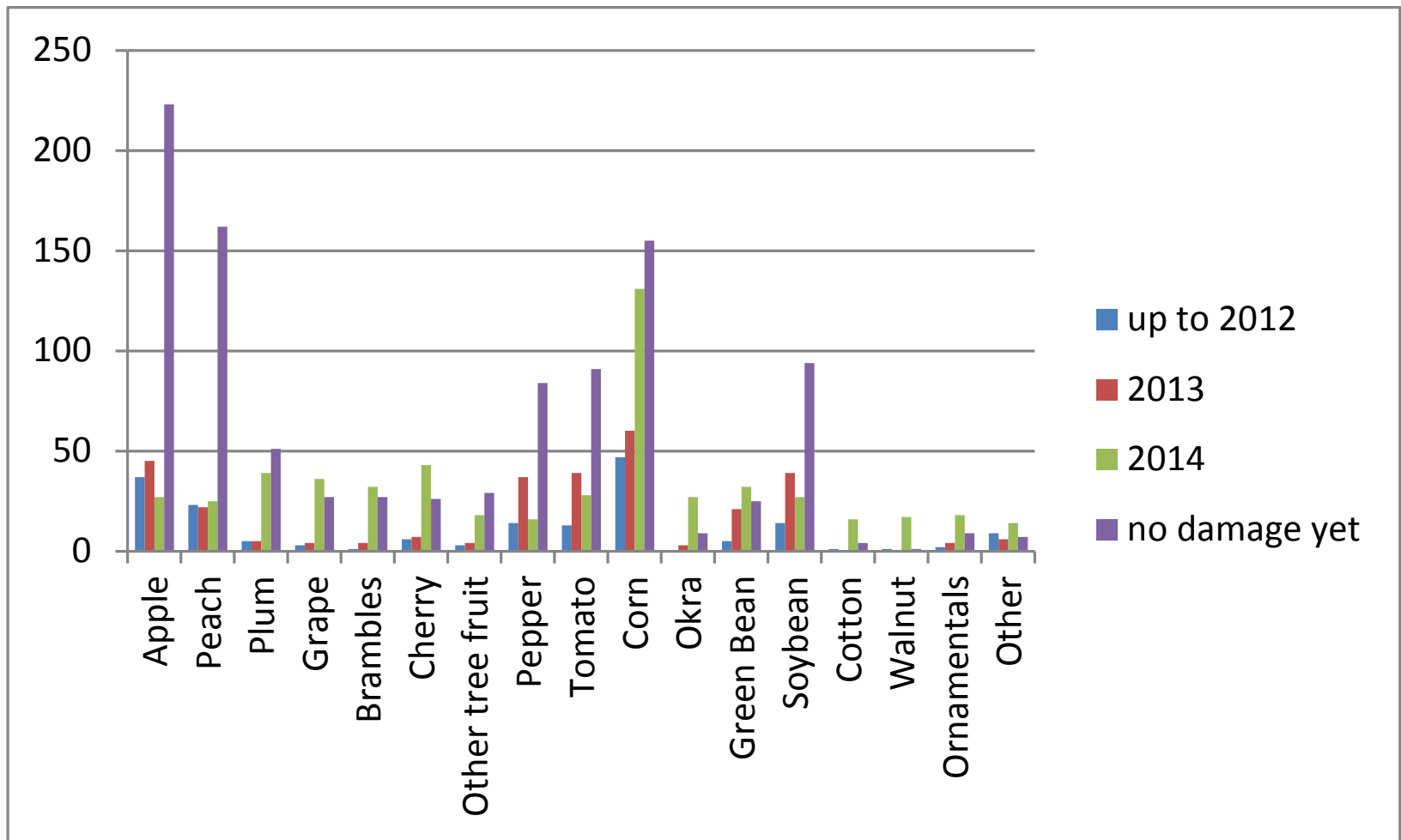
Efficacy	Chemical name	Trade name example	IRAC Group(s)	Crops labeled for:
_____	abamectin	Agri-Mek	6	many vegetables, tree fruits, strawberry
_____	acephate	Orthene	1B	soybeans, tobacco, some vegetables
_____	acequinocyl	Kanemite	20B	some vegetables, most fruits
_____	acetamiprid	Assail	4A	most vegetables, fruits

...48 more insecticides

# Evaluation of BMSB survey data

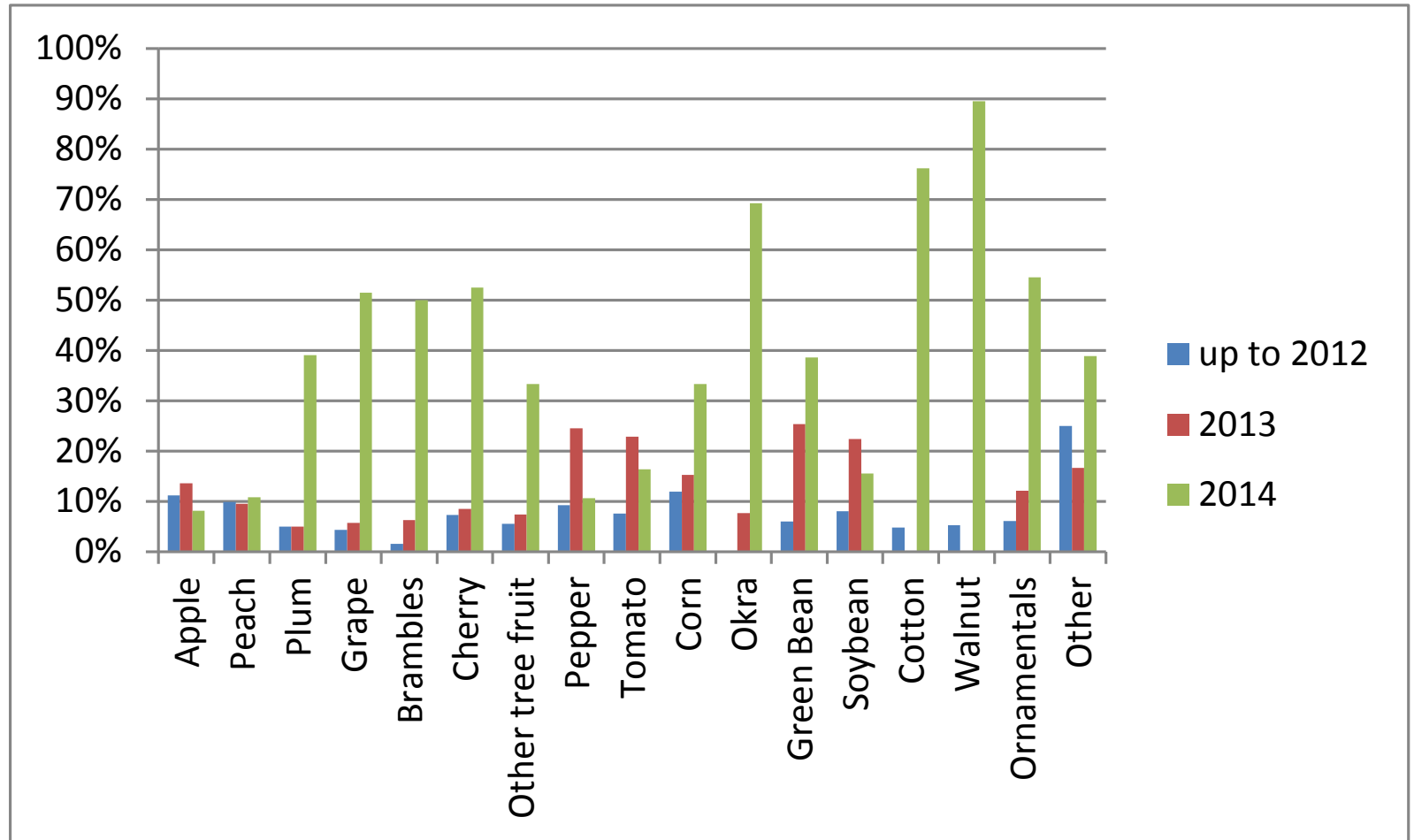
- Have conducted additional analysis of the economic data collected in both the on-line and grower meeting surveys collected by Day and Hanson (2013 and 2014, 1,122 observations)
- Questions 6-16 collected information on:
  - Grower assessment of the amount of economic damage caused by BMSB in specific crops **by state**
  - Number of additional sprays required for BMSB control **in specific crops by state**
  - Changes in other management tactics

# Growers: Year that BMSB showed up in different crops (number)

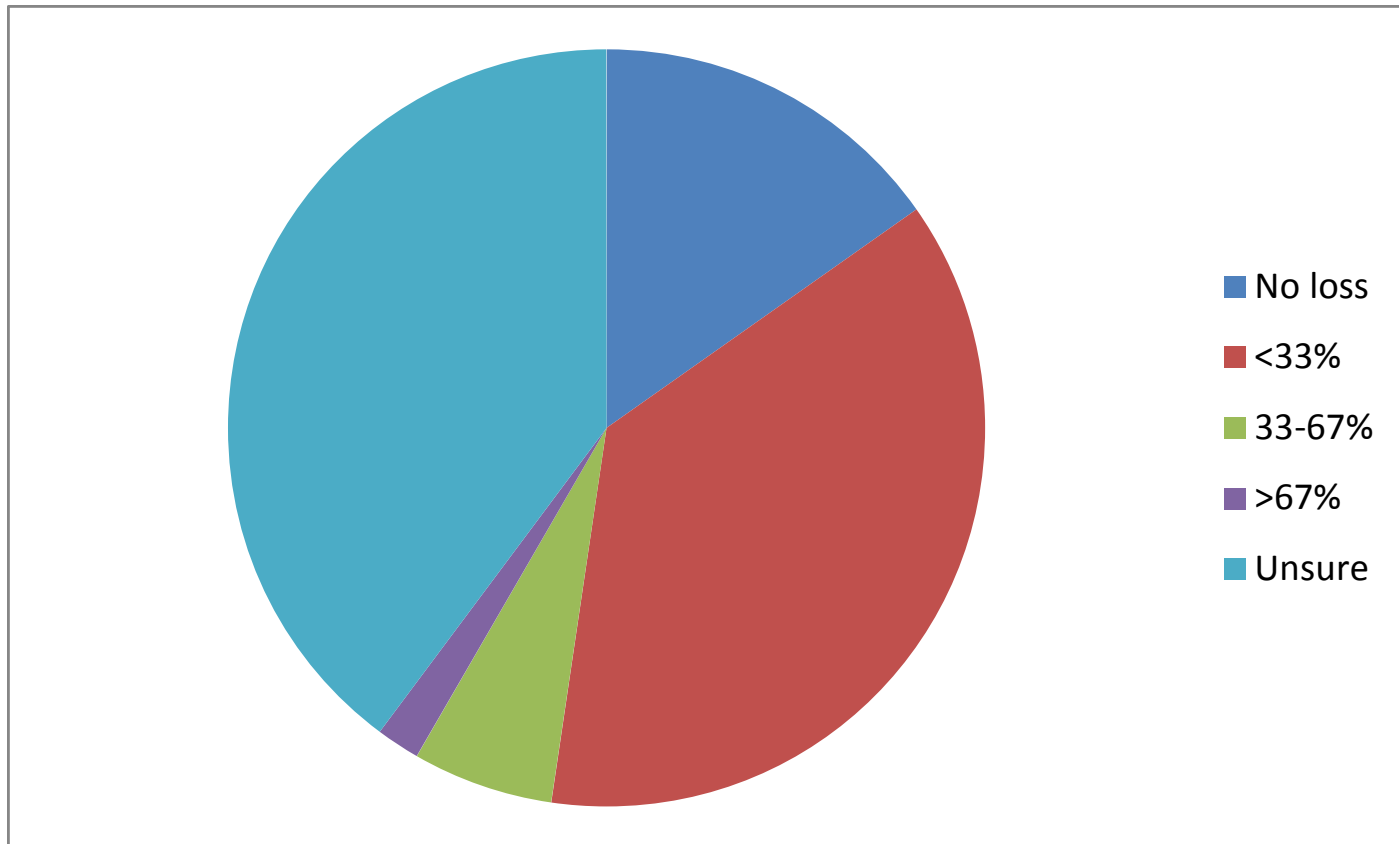




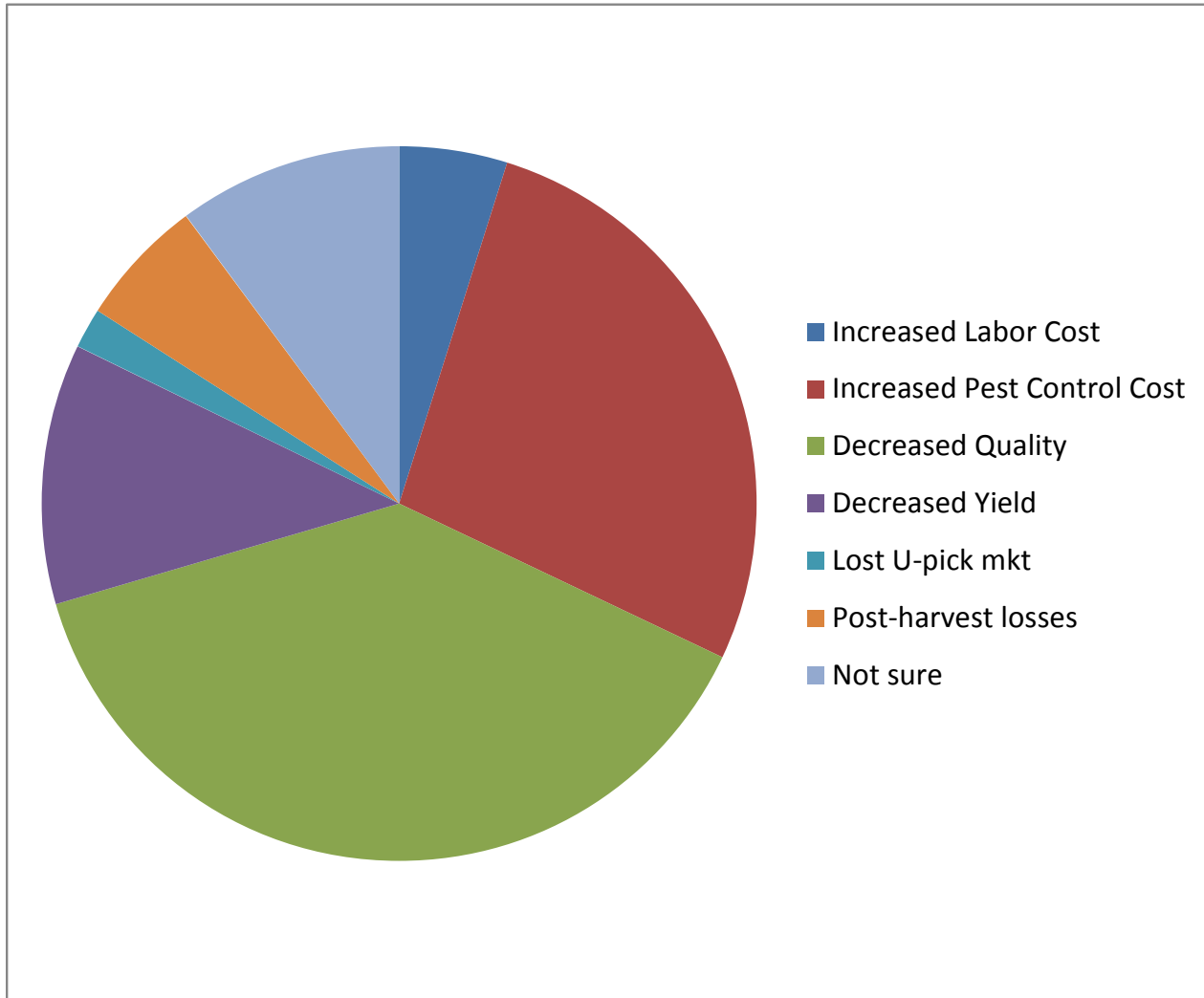
# Growers: Year that BMSB showed up in different crops (percent)



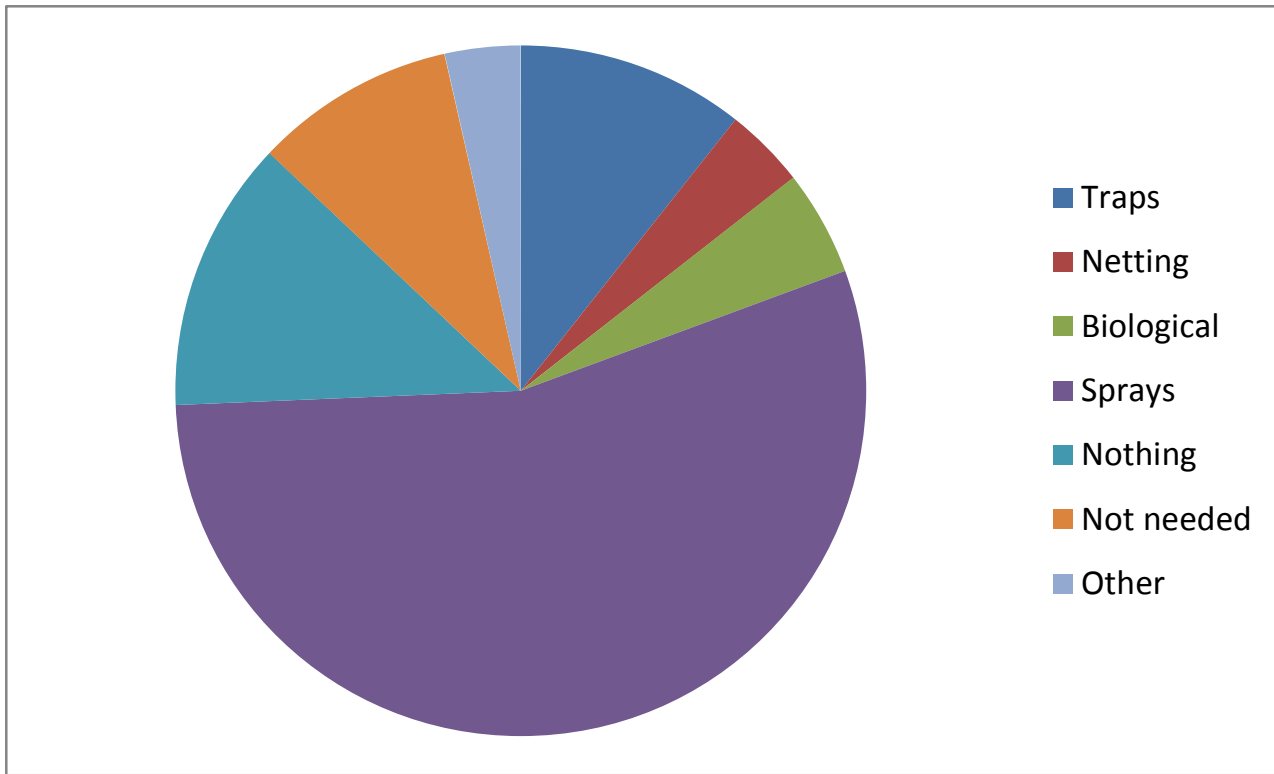
# Growers: How much was profit decreased because of BMSB?



# Growers: Most important cause of loss of profit by BMSB



# Growers: Management Response to BMSB



Average number  
of sprays: 3.2

Range: 1-6

# Summary of Economic Evaluation

- More data on the impact of BMSB on the cost of producing apples, peaches, and tomatoes will be evaluated in 2016.
- Will be helping determine the costs and potential benefits of proposed management tactics in 2016 (and beyond).
  - Estimate cost and benefits of proposed management strategies and make available through extension channels.
  - Evaluate potential physical and financial constraints faced by producers in implementing the proposed tactics.
  - Fine tune management recommendations and provide feedback to producers on the status and commercial viability of proposed control strategies.