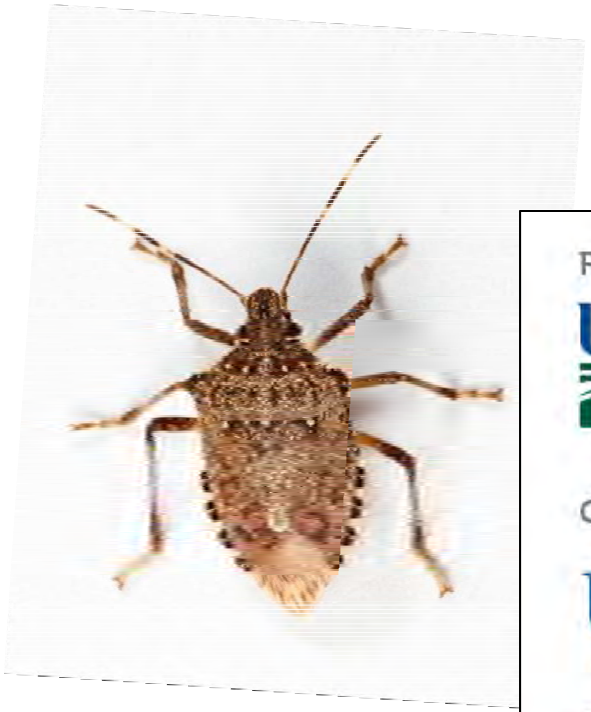
4.1 Economics



Funding

USDA United States Department of Agriculture

National Institute of Food and Agriculture

Specialty Crop Research Initiative

Grant #2011-01413-30937

Collaborating Institutions

University of Delaware

ARS

Penn State

Rutgers, The State University of New Jersey

Northeastern IPM Center

Washington State University

Cornell University

Virginia Tech

OSU Oregon State University

University of Maryland

NC State University

StopBMSB.org

Economic Evaluation Team Report- 2014

Jayson K. Harper
Professor of Agricultural Economics
Penn State University

Objectives of the economic evaluation:

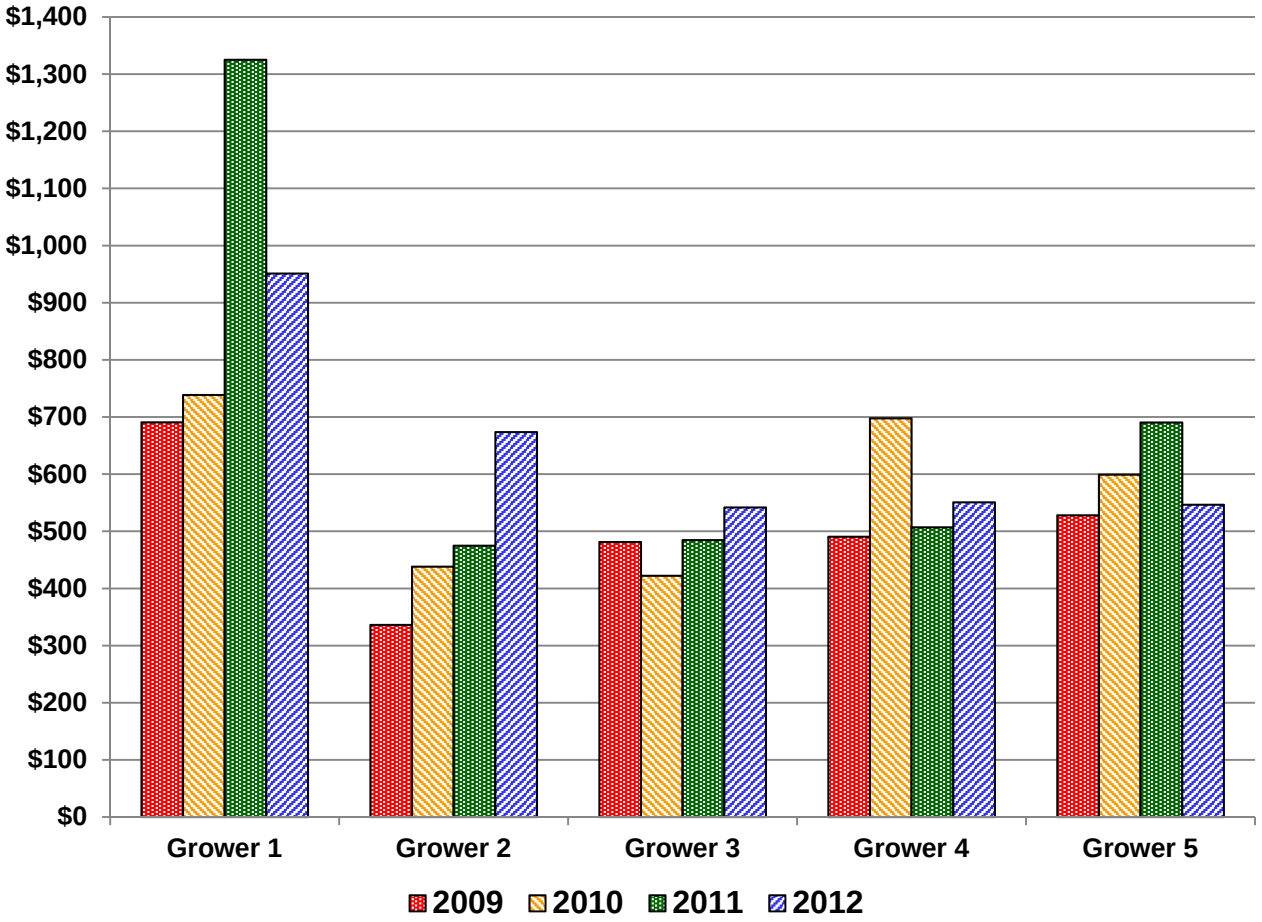
1) assess the impact of BMSB on specific commodities
2) estimate the cost of BMSB control strategies
3) project the cost and potential benefits of proposed management strategies

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 of new BMSB management techniques as they are developed

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



Spray records provided by Tracy Leskey, USDA-ARS

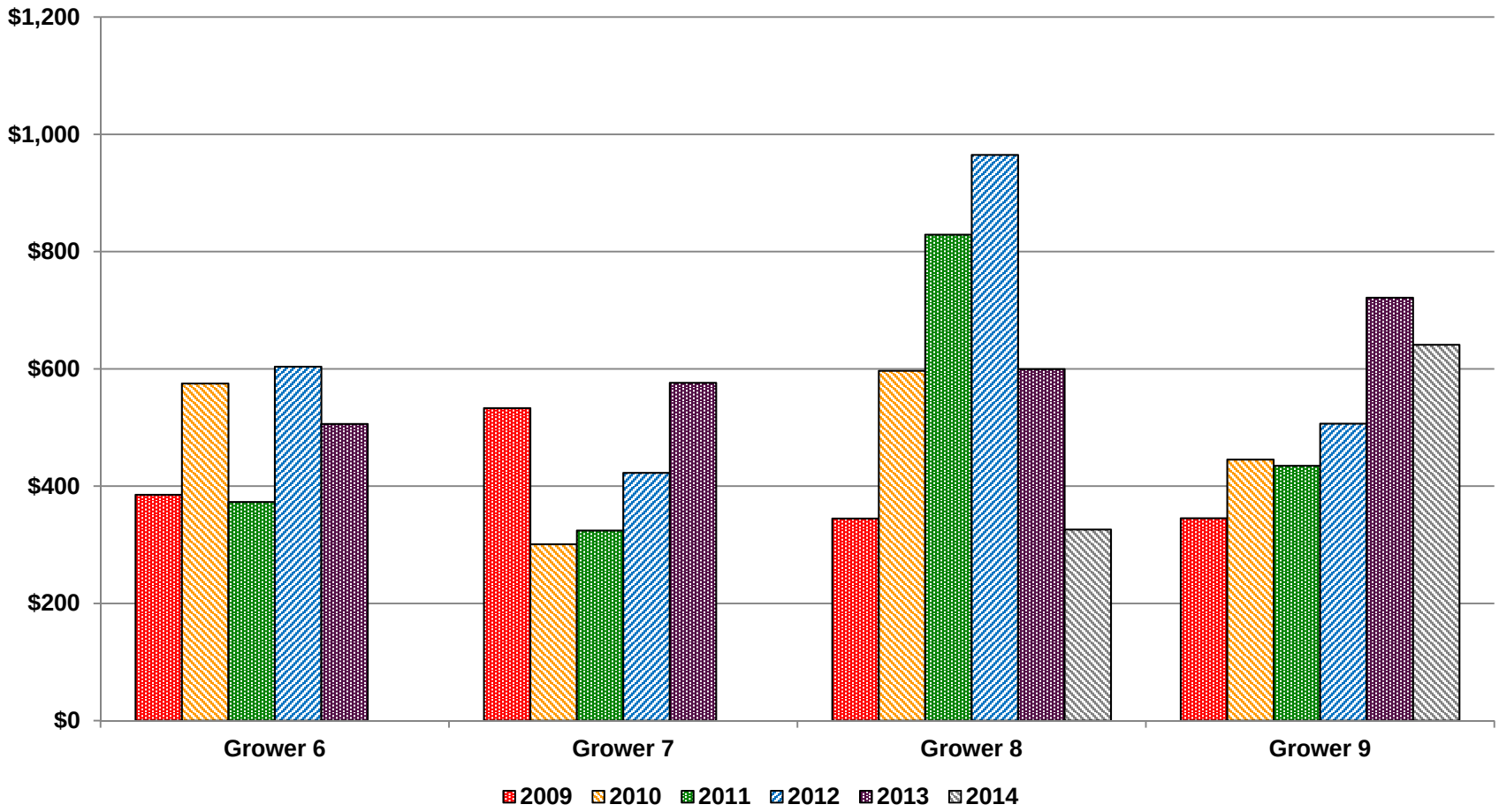
2009 – Pre-BMSB (BMSB had not yet become an issue for growers)

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)

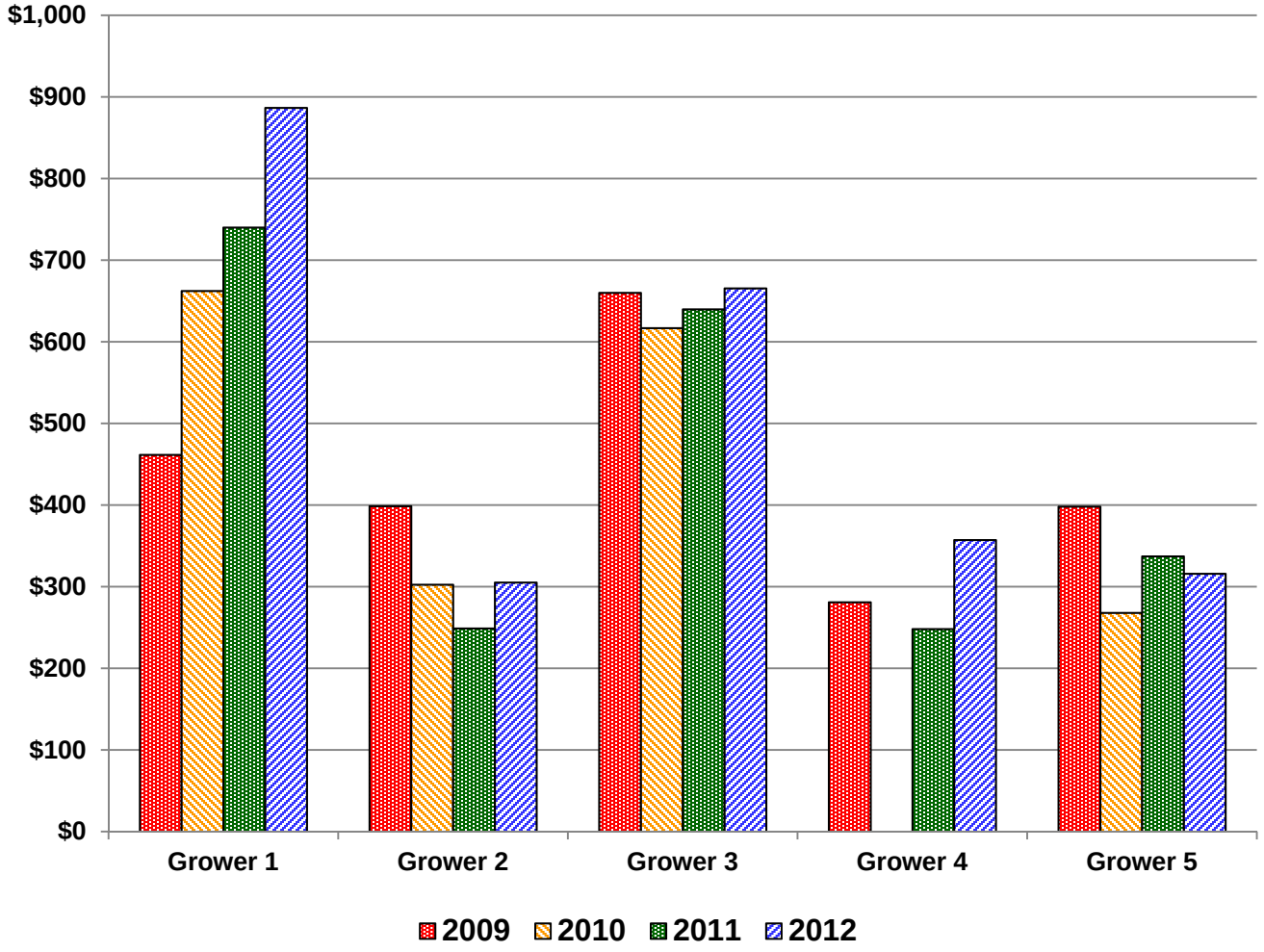
2012 – BMSB recommendations being developed and communicated (low populations in the early season, but high populations late)

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



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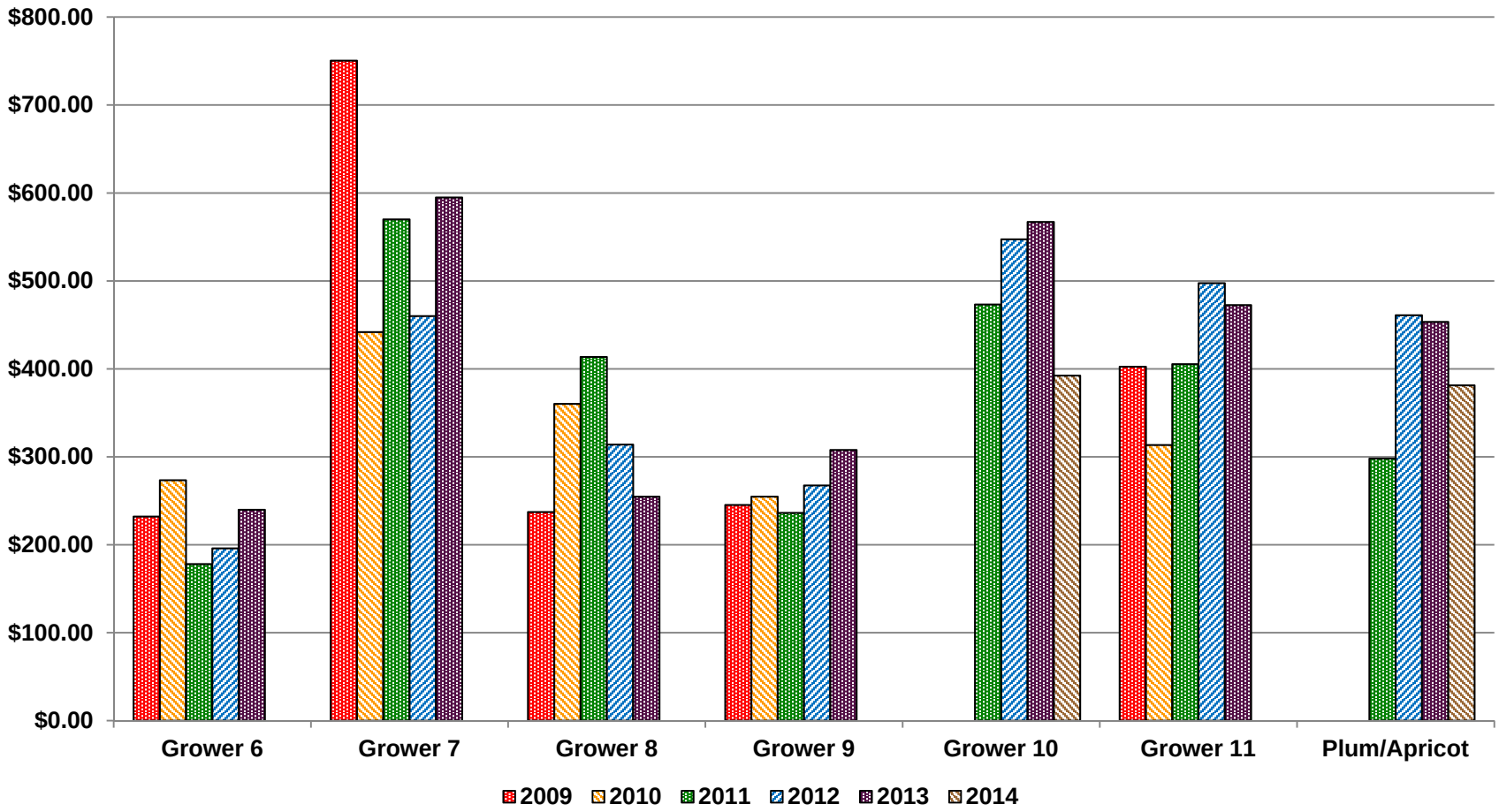
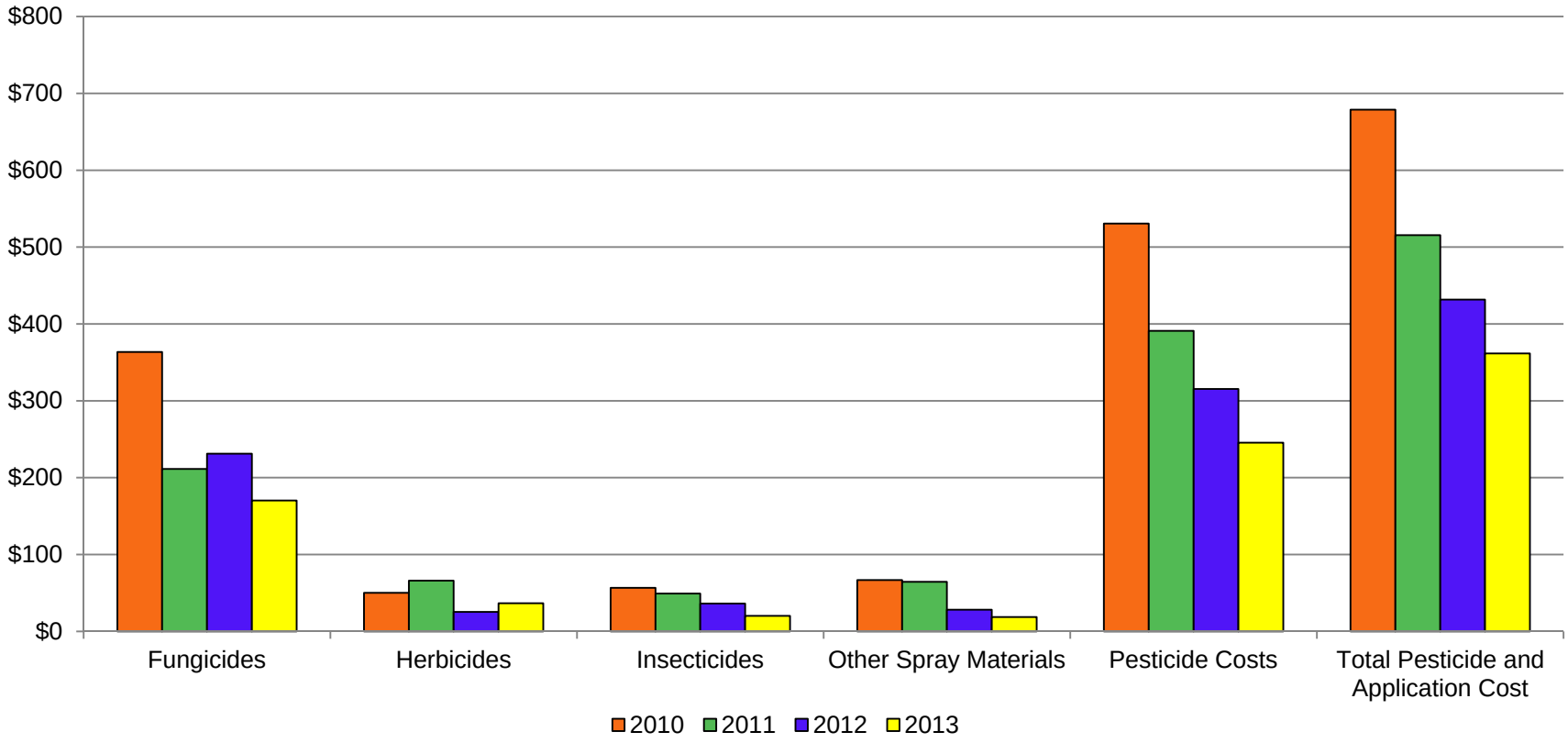
Spray records provided by Tracy Leskey, USDA-ARS

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



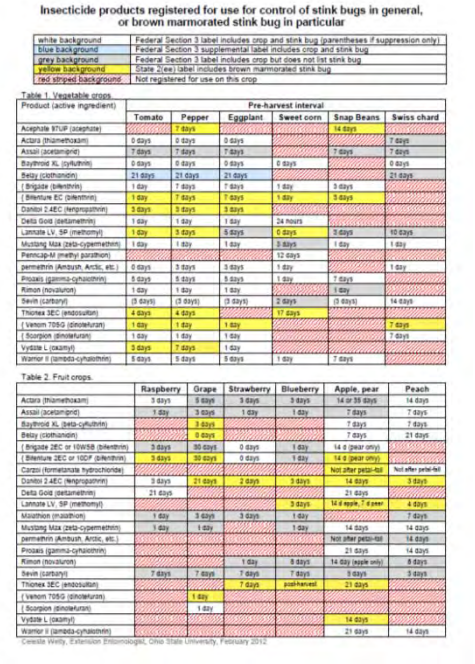
<u>Data from</u>: 9 growers in 2010, 11 growers in 2011, 28 growers in 2012, and 11 growers in 2013

Spray records provided by of Furmano Foods, Northumberland, PA

Cost of BMSB Spray Options

- Developing an Excel spreadsheet to estimate the cost of BMSB spray options by state
  - Label rates
  - Cost range (default price list can adjusted by user)
  - PHI
  - IRAC mode of action
  - Efficacy?

- Plan to make it available in early summer 2015



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.

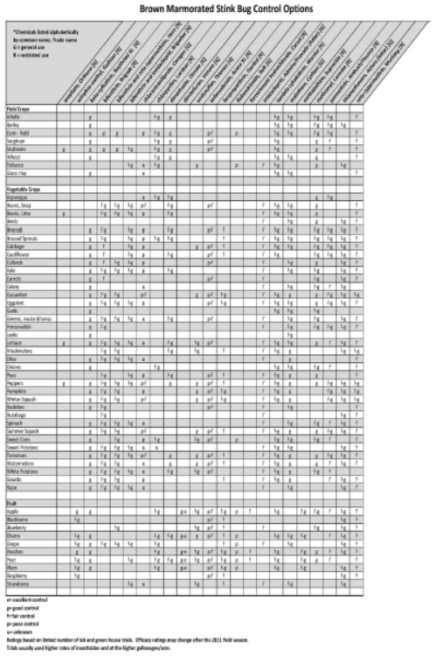
Product (active ingredient)	Pre-harvest interval					
	Tomato	Pepper	Eggplant	Sweet corn	Snap Beans	Swiss chard
Acephate 97UP (acephate)		7 days			14 days	
Actara (thiamethoxam)	0 days	0 days	0 days			7 days
Assail (acetamiprid)	7 days	7 days	7 days		7 days	7 days
Baythroid XL (cyfluthrin)	0 days	0 days	0 days	0 days		0 days
Belay (clothianidin)	21 days	21 days	21 days			21 days
(Brigade (bifenthrin)	1 day	7 days	7 days	1 day	3 days	
(Bifenture EC (bifenthrin)	1 day	7 days	7 days	1 day	3 days	
Danitol 2.4EC (fenpropathrin)	3 days	3 days	3 days			
Delta Gold (deltamethrin)	1 day	1 day	1 day	24 hours		
Lannate LV, SP (methomyl)	1 day	3 days	5 days	0 days	3 days	10 days
Mustang Maxx (zeta-cypermethrin)	1 day	1 day	1 day	3 days	1 day	1 day
Pennicap-M (methyl parathion)				12 days		
permethrin (Ambush, Arctic, etc.)	0 days	3 days	3 days	1 day		1 day
Proaxis (gamma-cyhalothrin)	5 days	5 days	5 days	1 day	7 days	
Rimon (novaluron)	1 day	1 day	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		
(Venom 70SG (dinotefuran)	1 day	1 day	1 day			7 days
(Scorpion (dinotefuran)	1 day	1 day	1 day			7 days
Vydate L (oxamyl)	3 days	7 days	1 day			
Warrior II (lambda-cyhalothrin)	5 days	5 days	5 days	1 day	7 days	

Table 2. Fruit crops.

	Raspberry	Grape	Strawberry	Blueberry	Apple, pear	Peach
Actara (thiamethoxam)	3 days	5 days	3 days	3 days	14 or 35 days	14 days
Assail (acetamiprid)	1 day	3 days	1 day	1 day	7 days	7 days
Baythroid XL (beta-cyfluthrin)		3 days			7 days	7 days
Belay (clothianidin)		0 days			7 days	21 days
(Brigade 2EC or 10WSB (bifenthrin)	3 days	30 days	0 days	1 day	14 d (pear only)	
(Bifenture 2EC or 10DF (bifenthrin)	3 days	30 days	0 days	1 day	14 d (pear only)	
Carzol (formetanate hydrochloride)					Not after petal-fall	Not after petal-fall
Danitol 2.4EC (fenpropathrin)	3 days	21 days	2 days	3 days	14 days	3 days
Delta Gold (deltamethrin)	21 days				21 days	
Lannate LV, SP (methomyl)				3 days	14 d apple, 7 d pear	4 days
Malathion (malathion)	1 day	3 days	3 days	1 day		7 days
Mustang Maxx (zeta-cypermethrin)	1 day	1 day		1 day	14 days	14 days
permethrin (Ambush, Arctic, etc.)					Not after petal-fall	14 days
Proaxis (gamma-cyhalothrin)					21 days	14 days
Rimon (novaluron)			1 day	5 days	14 day (apple only)	5 days
Sevin (carbaryl)	7 days	7 days	7 days	7 days	3 days	3 days
Thionex 3EC (endosulfan)			7 days	post-harvest	21 days	
(Venom 70SG (dinotefuran)		1 day				
(Scorpion (dinotefuran)		1 day				
Vydate L (oxamyl)					14 days	
Warrior II (lambda-cyhalothrin)					21 days	14 days

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

Ohio State handout
(Welty, 2012)



Brown Marmorated Stink Bug Control Options

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

Evaluation of BMSB survey data

- Now have access to the survey data collected by Day and Hanson (2013 and 2014, 1,122 observations)
- Will be conducting additional analysis of the economic data collected in both the on-line and grower meeting surveys (Questions 6-16)
  - 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

Summary of Economic Evaluation

- Gauging the impact of BMSB on the cost of producing apples, peaches, and tomatoes. More data and crops will be evaluated in 2015.

- Economic team is available to help determine the costs and potential benefits of proposed management tactics.
  - 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 tactics.
  - Make information on cost and benefits of proposed management strategies available through extension channels.