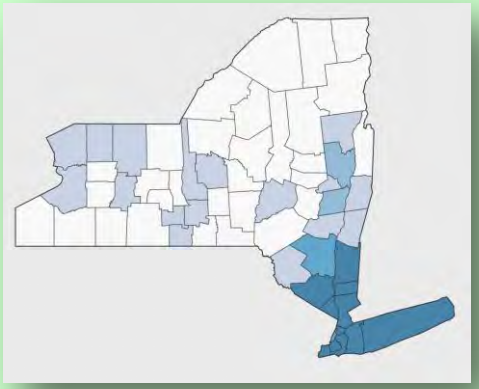
Integrated BMSB Management in Organic Pepper
HVRL, Highland NY 2013



BMSB use of Deciduous Host Trees

Adult BMSB movement to
Jalapeno Pepper
2nd gen. development

Trap and Kill Station
Adult Reduction

Use of *Beauveria bassiana*
strain GHA in organic mgt.

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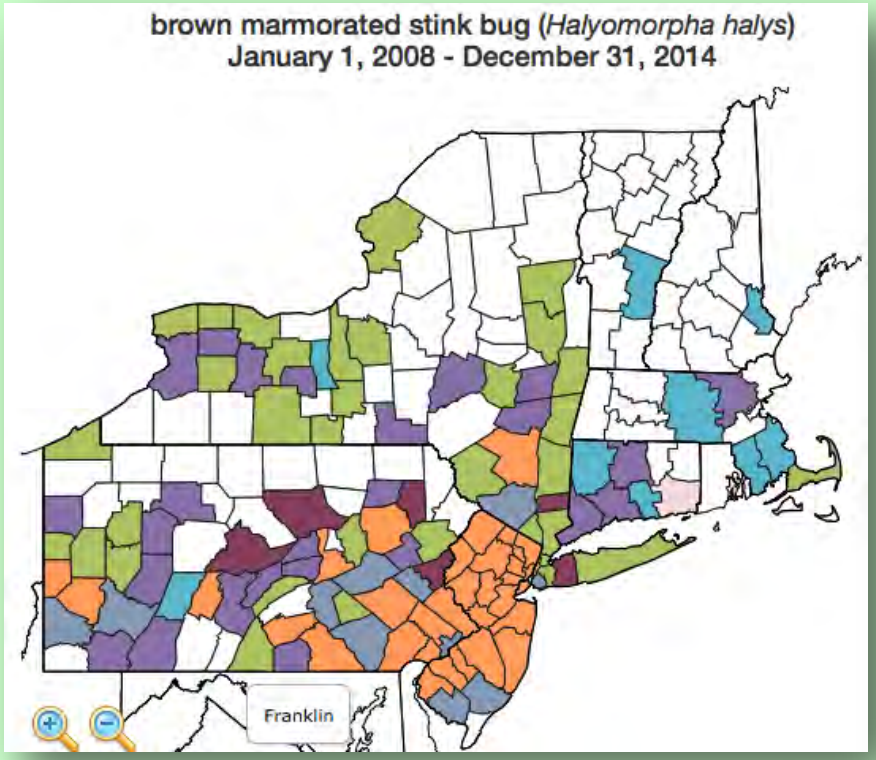
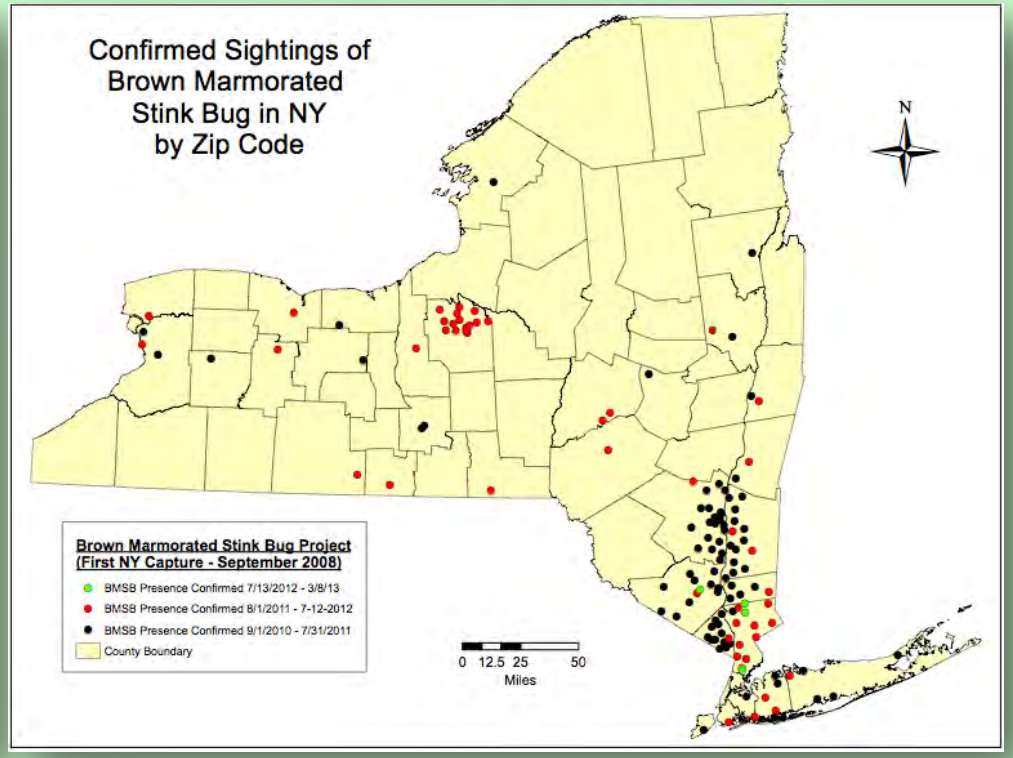
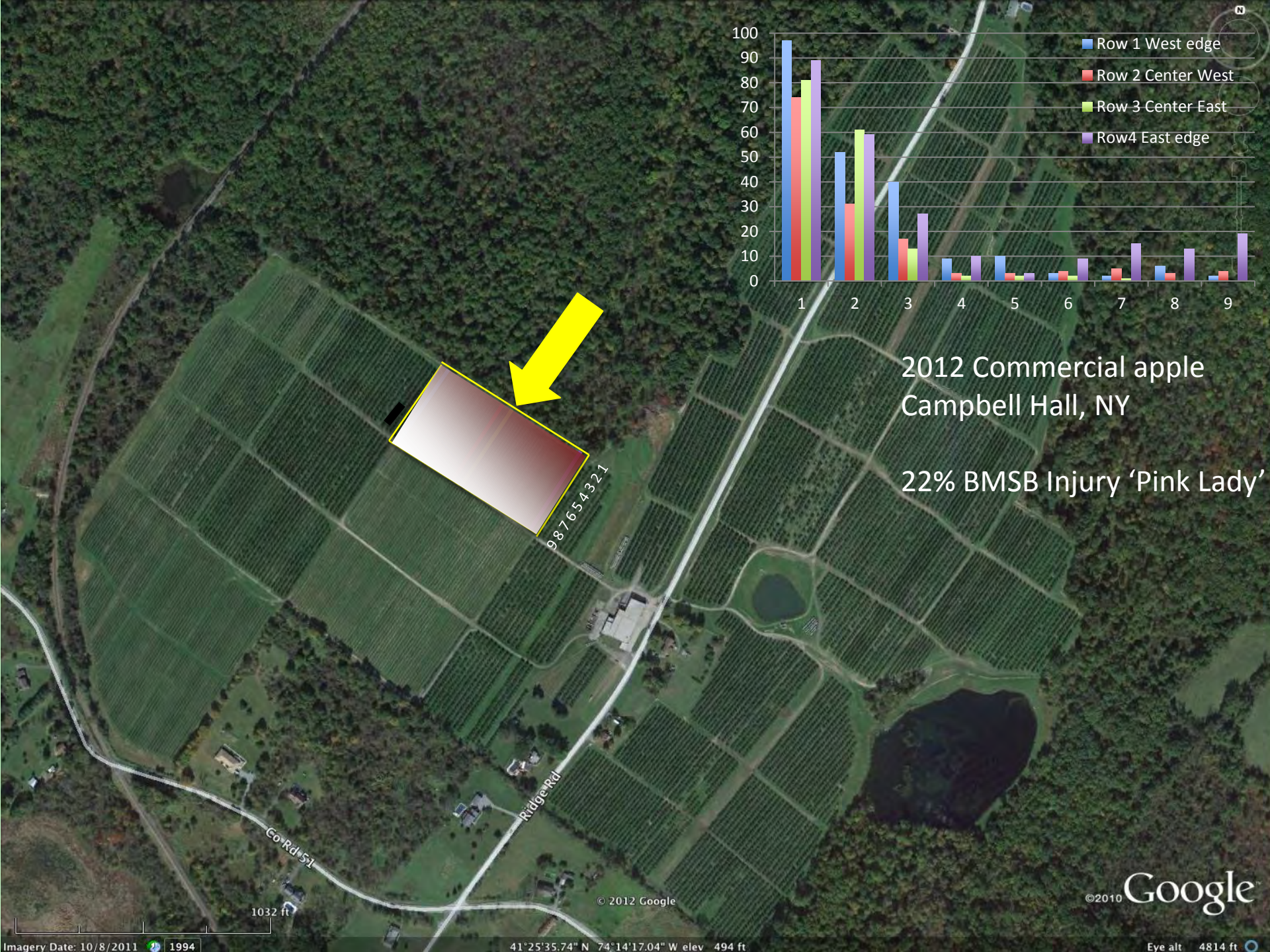
2013 BMSB Injury to Organic Pepper Hudson Valley, NY

The species was first documented in NY in the Hudson Valley Region in 2008**. In 2012 the pest cause significant injury to pome fruit in three NY counties.**





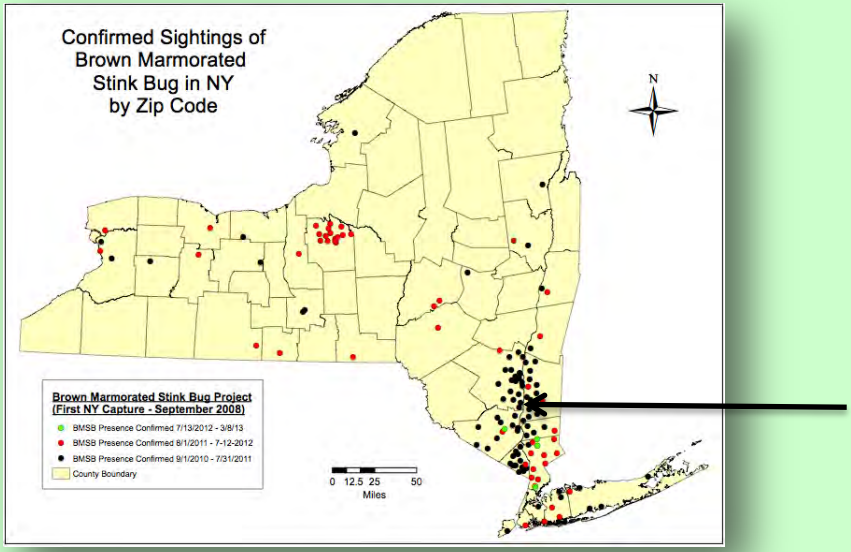
Pink Lady 2012


100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
Row 1 West edge
Row 2 Center West
Row 3 Center East
Row4 East edge
987654321
2012 Commercial apple
Campbell Hall, NY
22% BMSB Injury 'Pink Lady'
Ridge Rd
Co Rd 51
1032 ft
© 2012 Google
©2010 Google
Imagery Date: 10/8/2011
1994
41°25'35.74" N 74°14'17.04" W elev 494 ft
Eye alt 4814 ft

2013 BMSB Injury to Organic Pepper Hudson Valley, NY

- On August 12th, 15% injury was observed in a 1-acre organic planting of Jalapeno Pepper in Marlboro, NY.

- Nymph population averaged 4 per plant.



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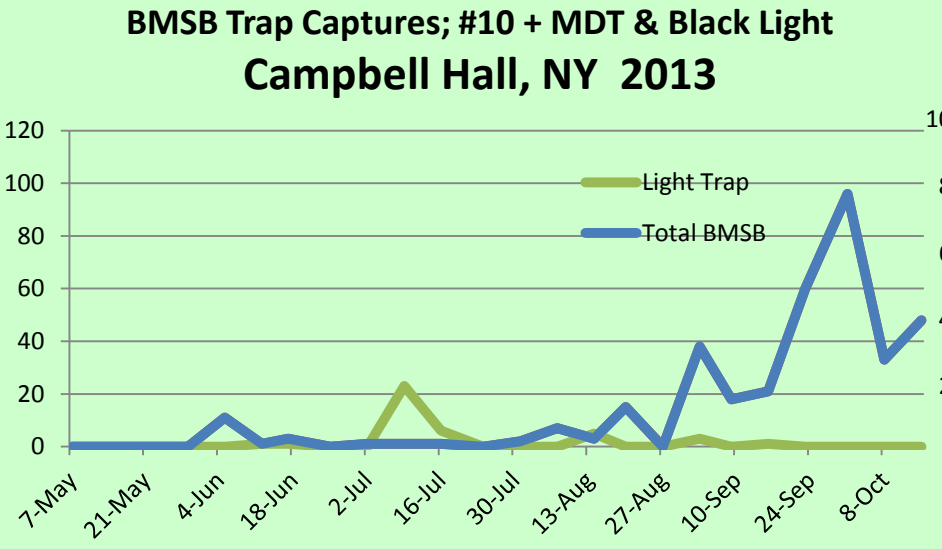
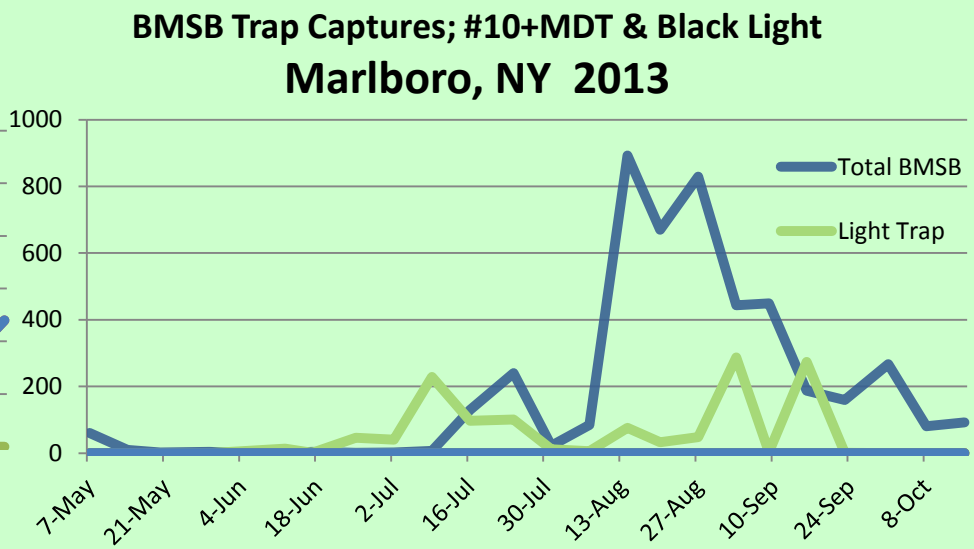
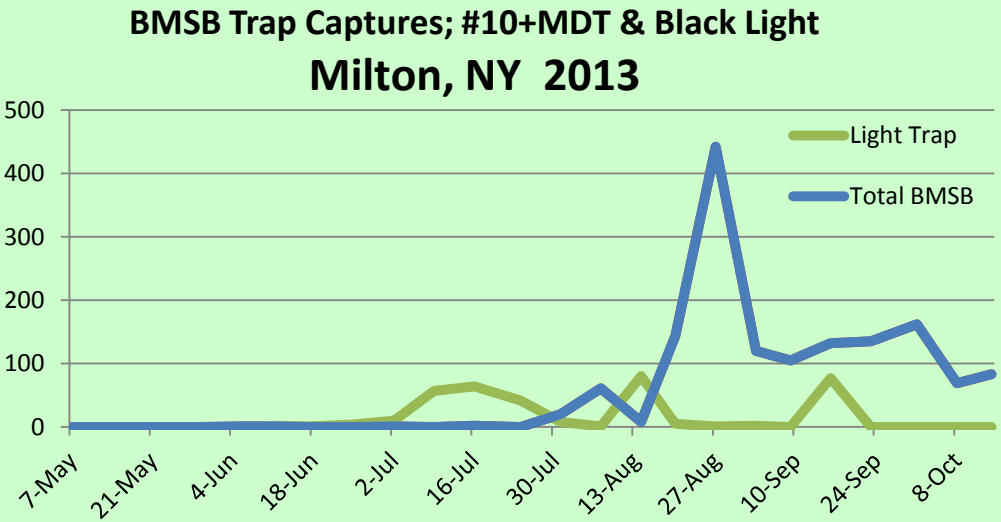
Studies of the Brown Marmorated Stink Bug, *Halyomorpha halys* (Stål), in New York State







Seasonal hours of RH above 90%

- 2012 < 150 hours
- 2013 >1200 hours

CORNELL'S Hudson Valley LABORATORY


ld Indian Rd
Hudson
River


BMSB in Jalapeno Pepper
12th August, Marlboro, NY
15% feeding injury
Averaging 4 nymphs per plant

2013 BMSB Injury to Pepper Marlboro, NY

- On August 12th, 15% injury was observed in a 1 acre organic planting of Jalapeno Pepper.

- Integrated pest management using 4 components employed to reduce BMSB field populations.
  - Netting
  - Halogen light
  - Pheromone blend
  - Biological control (*Beauveria bassiana*)

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2013 BMSB Injury to Pepper

- Employing 3 applications of Mycotrol-O @ 16 oz./A were made on 14 August, 1 & 14 September. Applications on 1 & 14 Sept. timed post rain events.
- 2 nets attached to 8’ posts were positioned along the north eastern edge of the field, 30m apart
- 2 pheromone lure sets (USDA # 10 + MDT) placed along top edge of 7’ x 14’ netting, used to attract BMSB away from agricultural commodity as trap and kill stations.

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MDT
USDA #10
Hudson Valley
Research Laboratory

Proceedure:

- Nets were of Blockade™ Insect Screen 36 x 25 mils by PAK Unlimited, INC.
- To a single trap was added a 500W light.
- On day 0 (7 September), each net were sprayed with 0.75 gal. of Bifenthrin 10DF solution using 3.0 oz./gal.
- On days 0-1, nets were monitored with no captures of BMSB observed.
- On day 2 (9 September), lures and 500w Halogen light were added.
- Sampling of netted traps were made through October.

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Proceedures Con't

- Generator driven 500W Halogen light directed toward the field population of BMSB.
- Plastic sheets were used to define location and number of BMSB trap and kill data.
- Study was designed to:
  1. Determine the attractiveness of lights with net relative to net alone
  2. Determine the number of BMSB observed coming from field versus forest sides of trap

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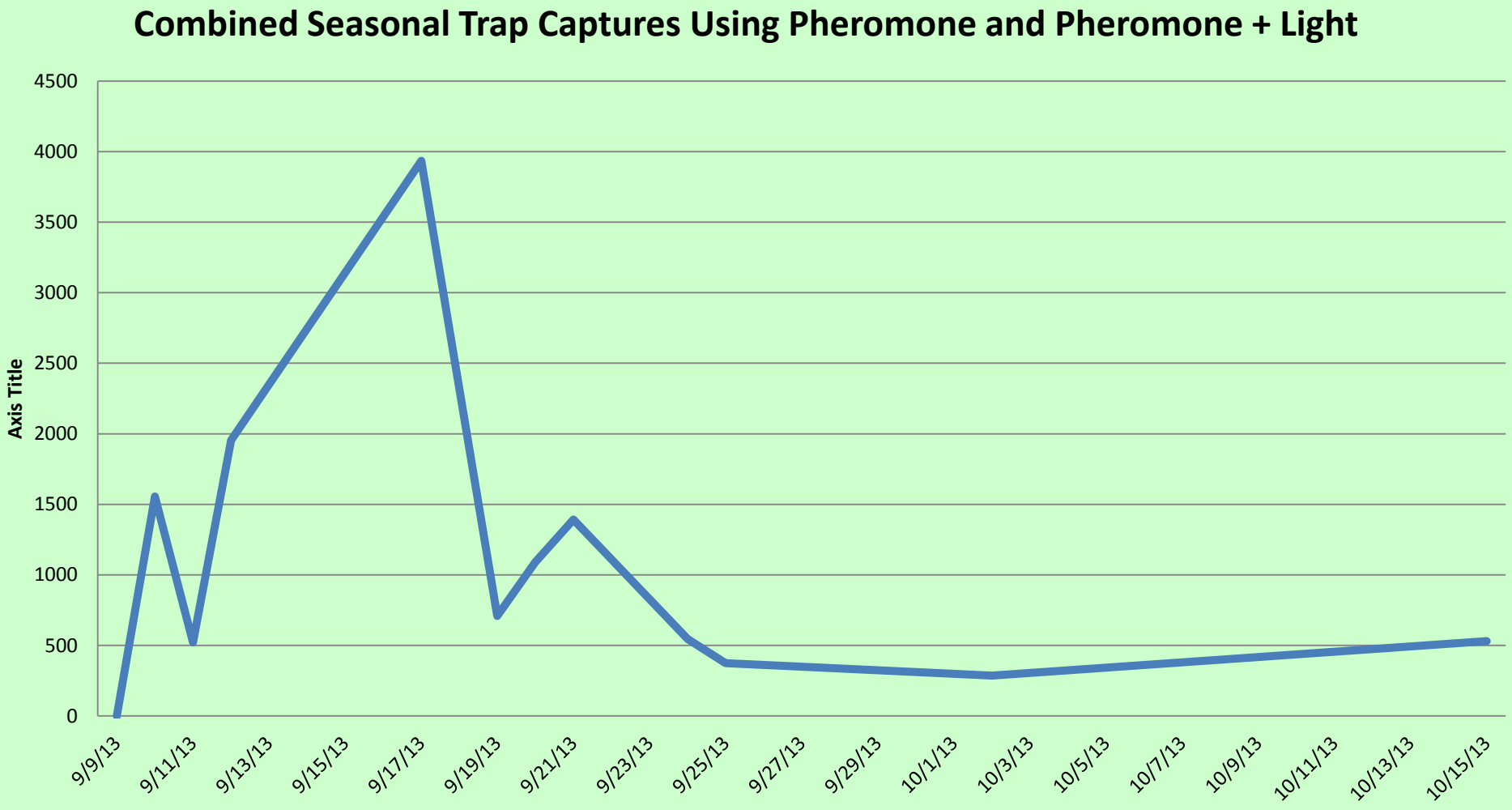
- BMSB populations were observed on Black Walnut and Tree of Heaven, appearing to have acted as intermediate hosts, fostering migrations
- BMSB locations on netting traps with only pheromone were equally dispersed on the field and forested sides of net.
- Nights when lights were on, BMSB were heavily concentrated on the field side in front of the light with higher numbers observed.

Ailanthus altissima

Juglans nigra

Studies of the Brown Marmorated Stink Bug, *Halyomorpha halys* (Stål), in New York State



Total BMSB = 12,894

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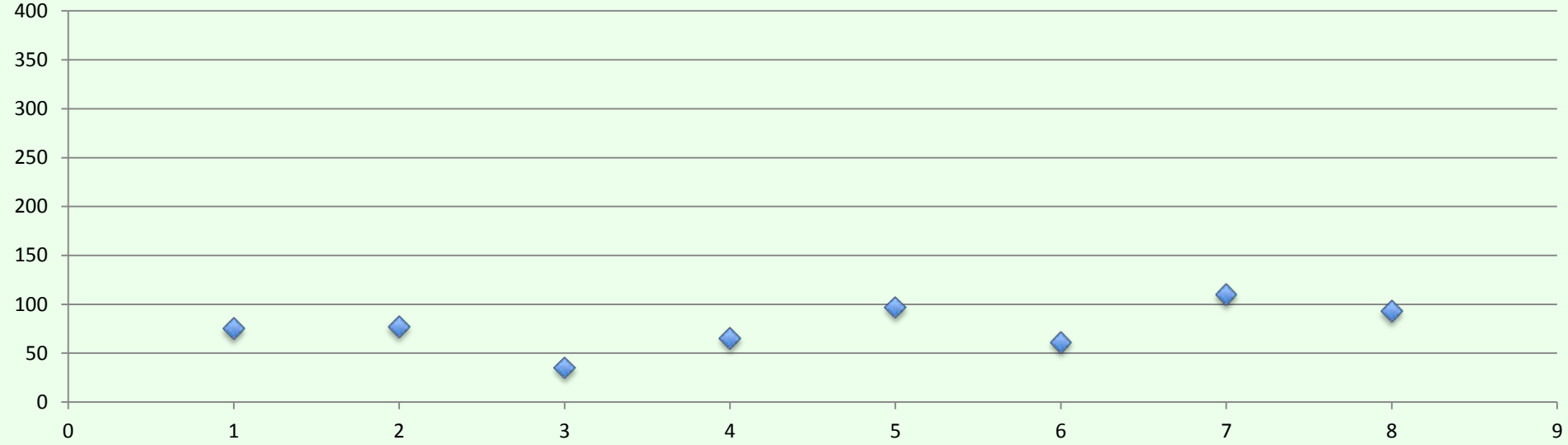
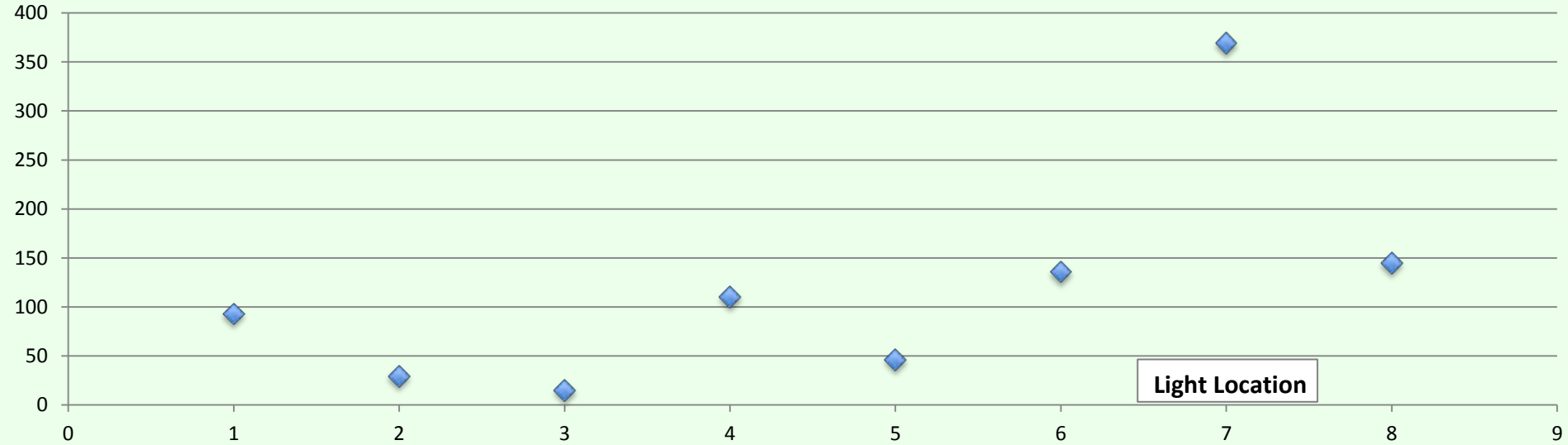
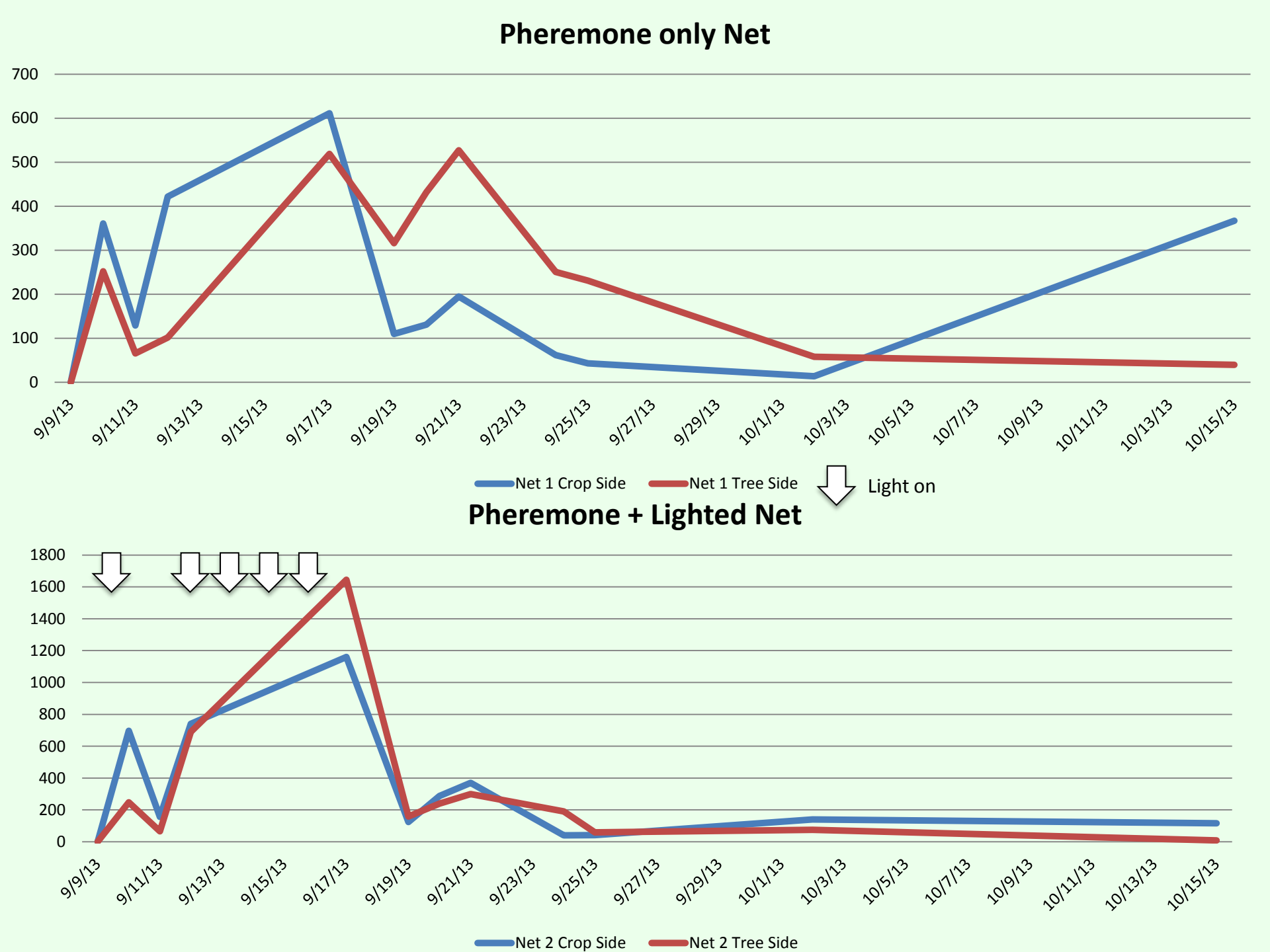
Adult BMSB Capture Locations Along the Base of Netting Of Two Trap Types on morning of 11 September, 2013

#10 + MDT Lure only



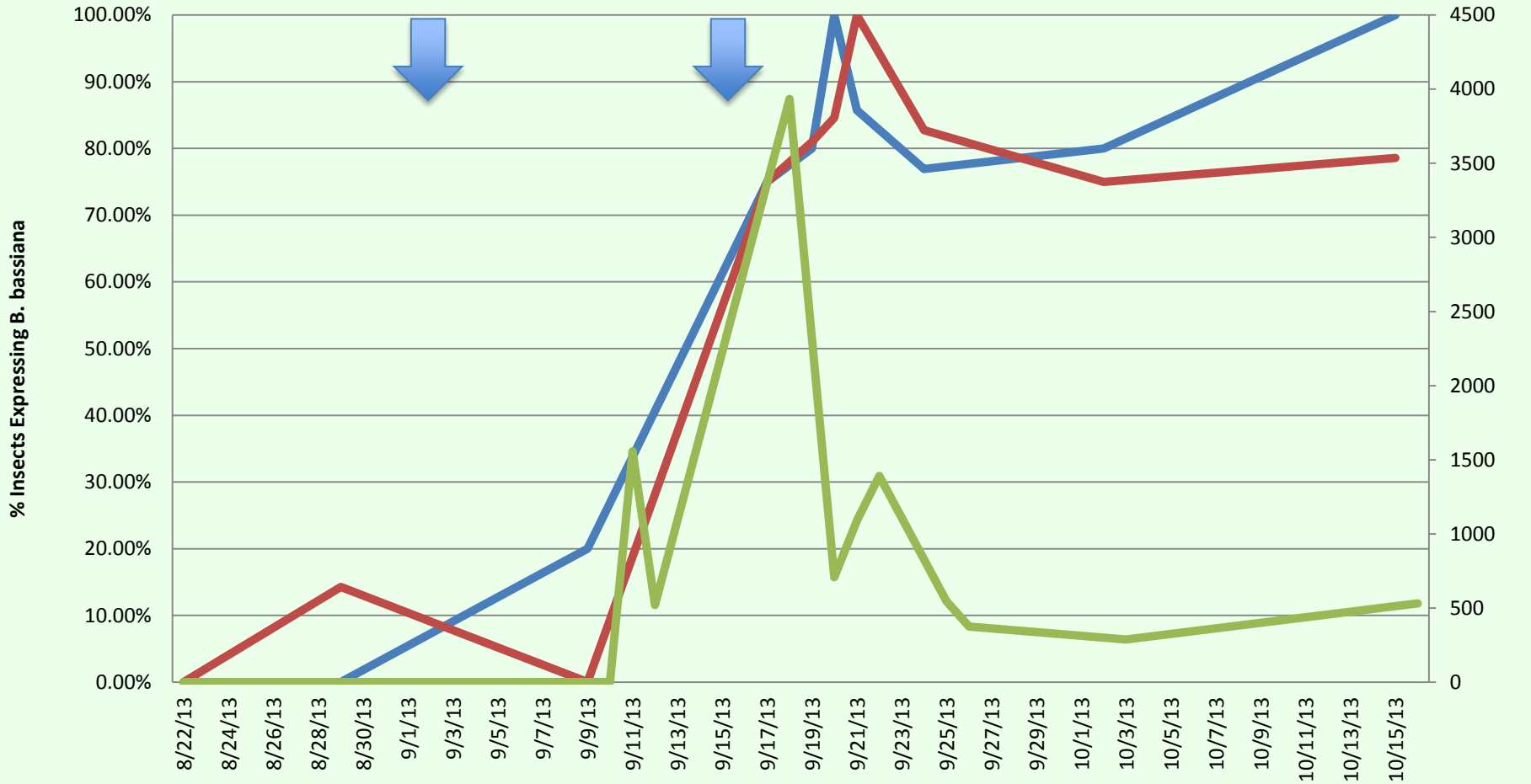
#10 + MDT Lure + 500W Halogen Lamp




Pheremone only Net
700
600
500
400
300
200
100
0
9/9/13
9/11/13
9/13/13
9/15/13
9/17/13
9/19/13
9/21/13
9/23/13
9/25/13
9/27/13
9/29/13
10/1/13
10/3/13
10/5/13
10/7/13
10/9/13
10/11/13
10/13/13
10/15/13
Net 1 Crop Side
Net 1 Tree Side
Light on
Pheremone + Lighted Net
1800
1600
1400
1200
1000
800
600
400
200
0
9/9/13
9/11/13
9/13/13
9/15/13
9/17/13
9/19/13
9/21/13
9/23/13
9/25/13
9/27/13
9/29/13
10/1/13
10/3/13
10/5/13
10/7/13
10/9/13
10/11/13
10/13/13
10/15/13
Net 2 Crop Side
Net 2 Tree Side


BMSB Infested With
Beauveria bassiana strain GHA
(Mycotrol-O @ 16 oz./A)
Hudson Valley
Research Laboratory

B. bassiana expression over Time



	8/22/13	8/29/13	9/9/13	9/10/13	9/11/13	9/16/13	9/17/13	9/19/13	9/20/13	9/21/13	9/24/13	9/25/13	10/2/13	10/15/13	
Net 1 infection	0.00%	0.00%	20.00%			73.66%		75.00%	80.00%	100.00%	85.71%	76.92%		80.00%	100.00%
Net 2 infection	0.00%	14.29%	0.00%			82.95%		75.00%	80.95%	84.62%	100.00%	82.76%		75.00%	78.57%
Population	0			0	1556	521	1954		3935	708	1090	1392	545	375	287

Beauvaria bassiana strain GHA applications *(Mycotrol-O @ 16 oz./A)*

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2013-14 Use of nets for orchard monitoring

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Thanks to the staff at the HVL for all their support:

Technical Assistant.....	Allen Clayton
Summer Research Assistant	Tim Lamposona
Summer Research Assistant	Kellyn Will
PT Summer Research Assistant	Henry Grimsland
Summer Research Intern (CCE BMSB).....	Susan Weibman
PT Summer Intern	Brianna Flonc

Farm Manager	Albert Woelfersheim
Administrative Assistant	Donna Clark
HVL & NEWA Weather Data.....	Anne Rugh, Joe Whalon