Visual Surveys of BMSB in Agroecosystems in Southwest VA

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Typical sampling site in Virginia

Garrett Farms, Glenvar, VA

- Tree line
  - Native
  - Invasive

- Agricultural commodities
  - Corn
  - Squash
  - Tomatoes
  - Peppers
  - Pumpkins
Survey methods

- Weekly visual survey in 2011 and 2012 (Apr to Oct)
  - 3-min. sample unit
  - Trees (native and introduced)
  - Agricultural commodities
April to mid-May

- April & May - Occasional adult activity around human dwellings and on trees & shrubs
- May 2, 2012 - observed a mating pair on Chinese privet
Also observed in the spring

BMSB adult aggregations with harlequin bugs on mustard and horseradish
1st BMSB eggs - 3rd week of May

- May 21, 2012 – 2nd instars were found on a paulownia tree in Suffolk, VA
- May 25, 2012 – 1st egg mass in Winchester, VA on catalpa (Angel Acebes)
- May 26, 2012 - Egg mass detected in Kearneysville, WV on peach by Leskey's group
- May 28 on Tree of Heaven (Ailanthus) in Salem, VA by us
- June 6 in vineyards (Basnet & Pfeiffer)
Biofix for BMSB development in the mid-Atlantic

• 14:10 hr (light:dark) phase triggers reproductive development in adult females
• In Kearneysville, WV it occurs on 4 May
• Blacksburg, VA it occurs on 9 May
• Explains why eggs were not found until late May despite unusually warm spring 2012
June - Peak BMSB oviposition period

- Catalpa (*Catalpa bignonioides* and *C. speciosa*) – major host plant for BMSB oviposition
Proportion of BMSB Life Stage by Week, 2012

Legend
- eggs
- 1sts
- 2nd-3rd
- 4th-5th
- Adults

[Graph showing the proportion of BMSB life stages by week, with different life stages represented by distinct lines on the graph.]
2011 - BMSB nymph densities

# BMSB nymphs/sample

- Crops
- Bordering tree line

Dates:
- May 29 - Jun 4
- Jun 12 - Jun 18
- Jun 26 - Jul 2
- Jul 10 - Jul 16
- Jul 24 - Jul 30
- Aug 7 - Aug 13
- Aug 21 - Aug 27
- Sep 4 - Sep 10
- Sep 18 - Sep 24
2012 - BMSB nymph densities

# SB nymphs per sample

- Crops
- Bordering tree line

April 22 - April 28
May 6 - May 12
May 20 - May 26
June 3 - June 9
June 17 - June 23
July 1 - July 7
July 15 - July 21
July 29 - August 4
August 12 - August 18
August 26 - September 1
September 9 - September 15
September 23 - September 29
Accumulated DDs (base 17°C) for Blacksburg, VA

 Nielsen line (538 +148 DD)
Accumulated Degree Days

Proportion of BMSB Life Stage

2012

Accumulated Degree Days

Apr. 22 - Apr. 28
Apr. 29 - May 5
May 6 - May 12
May 13 - May 19
May 20 - May 26
May 27 - Jun 2
Jun 3 - Jun 9
Jun 10 - Jun 16
Jun 17 - Jun 23
Jun 24 - Jun 30
Jul 1 - Jul 7
Jul 8 - Jul 14
Jul 15 - Jul 21
Jul 22 - Jul 28
Jul 29 - Aug 4
Aug 5 - Aug 11
Aug 12 - Aug 18
Aug 19 - Aug 25
Aug 26 - Sep 1
Sep 2 - Sep 8
Sep 9 - Sep 15
Sep 16 - Sep 22
Sep 23 - Sep 29

Proportion of BMSB Life Stage

Adults
Eggs
Blacksburg DDs

Apr. 29 - May 5
May 6 - May 12
May 13 - May 19
May 20 - May 26
May 27 - Jun 2
Jun 3 - Jun 9
Jun 10 - Jun 16
Jun 17 - Jun 23
Jun 24 - Jun 30
Jul 1 - Jul 7
Jul 8 - Jul 14
Jul 15 - Jul 21
Jul 22 - Jul 28
Jul 29 - Aug 4
Aug 5 - Aug 11
Aug 12 - Aug 18
Aug 19 - Aug 25
Aug 26 - Sep 1
Sep 2 - Sep 8
Sep 9 - Sep 15
Sep 16 - Sep 22
Sep 23 - Sep 29
Observations in October

- Matt Kassen research (VT and Penn State)
- Tree of heaven (*Ailanthus*) samara clusters
- Numerous BMSB 3rd-5th instars and adults