How Destructive is Brown Marmorated Stink Bug on Herbaceous Plants?

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ABSTRACT: The brown marmorated stink bug (BMSB) has expanded its range to 40 states and feeds on many species of plants, some of which are not recorded in its native habitat in Asia. BMSB adults and nymphs have been observed feeding on flowers and seed pods of several ornamental herbaceous plants, but the damage to flowers, seedpods, stems and leaves has not been documented. Disease transmission from BMSB feeding on herbaceous plants has not been confirmed in the literature. Our experiments were designed to determine if BMSB was a significant pest of herbaceous perennial plants growing in commercial perennial plant production nurseries. BMSB was found feeding on a number of herbaceous plants, but little damage and no disease transmission was observed. A list of potential target herbaceous perennials has been developed.

INTRODUCTION

In a 2012 UMD greenhouse study (Gill et al., 2013), BMSB was documented feeding on herbaceous transplants including snapdragon, petunia, dahlia, and false indigo (*Baptisia*). However, little information was known about their impact upon perennial (herbaceous) plants in nurseries and greenhouses. This study was arranged to determine if BMSB was a significant pest of perennial plants growing in a commercial perennial plant production nursery.

MATERIALS AND METHODS

- Plants were monitored at three locations:
  - North Creek Nursery in southeastern Pennsylvania
  - Holly Hill Nurseries on the Eastern Shore of Maryland
  - Grasshopper Perennial Nursery in Western Maryland
- Plants surveyed weekly 1 May through 15 June and biweekly thereafter until 15 October
- Three to five plants of each perennial plant cultivar was monitored for BMSB for a total of 5 minutes each
- Pots were lifted up to inspect for egg masses and life stages on the undersides of leaves
- Parameters measured for each BMSB sighting:
  - life stage, location on plant (leaf, stem, flowers, seed)
  - feeding/non-feeding; percent damage
- A pyramid/ tedders trap baited with USDA Pheromone #10 (changed monthly) and the commercial available pheromone lure (2E,4E,6Z=10:COOMe) with Vapona kill strip was set up onsite to quantify the BMSB population pressure
- Trap counts of all stages of BMSB were recorded at each monitoring visit
- Plants with feeding injury were taken to the plant diagnostic clinic for examination for disease

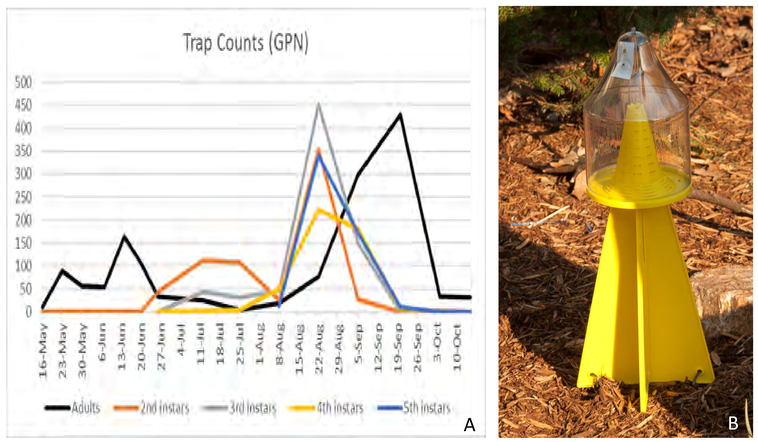

Figure 1. BMSB TRAP COUNTS, Grasshopper Perennial Nursery (GPN) Knoxville, MD 2013 (A). Tedders trap used for trapping BMSB at nursery locations (B).

RESULTS

1) BMSB was found feeding on 29 different perennial plants/ cultivars

2) BMSB preferred to feed on flowers, buds, or just under a bud (on the swollen peduncle/receptacle of a flower) and newly forming seeds or seedpods when present on plants

3) The preferred perennial plants were: Hairy rose mallow (*Althea lasiocarpus*) (=*Hibiscus moscheutos* subsp. *lasiocarpos*), *Caryopteris* 'Dark Knight', Hollyhock 'Halo Blossom' (*Alcea rosea*), Veronica 'Sunny Border Blue', *Stokesia* 'Klaus Jelitto' and Dwarf rose mallow (*Hibiscus moscheutos)*

4) Egg masses were found on *Althea*, *Veronica*, and *Persicaria*

Figure 2. Brown marmorated stink bug stages from egg to adult

CONCLUSION

Brown marmorated stink bugs did not cause aesthetic or economic damage to perennials. No detectable necrotic spotting of foliage or stems was noted. No diseases were detected as being associated with feeding sites, and no feeding damage was found on any plants.

Baited Tedders traps confirmed populations of BMSB were present at the study sites, and populations varied between sites. For example, Grasshopper Perennial Nursery captured a total of 3,745 BMSBs between 16 May and 15 October 2013; whereas North Creek Nursery captured 395 BMSB for the same time period. The top two preferred perennial species that were both fed upon and visited by BMSB at GPN were *Althea lasiocarpus* and *Caryopteris* 'Dark Knight', followed by *Veronica* 'Sunny Border Blue' and Hollyhock 'Halo Blossom.'

Table 1. BMSB egg masses, nymphs, adults, and feeding activity are noted on the following perennial plants:

Plant	Leaves	Stem	Flowers/ Flower Buds	Seeds/ Seed pods
Alcea rosea 'Halo Blossom'		N		
Althea lasiocarpus	EM, N	N	A, N	
Baptisia	A, N	A		
Caryopteris 'Dark Knight'	A, N	N		N
Caryopteris 'Sterling Silver Longwood Blue'	A,N			
Chelome 'Hot Lips'				A
Chrysanthemum 'Pink Sheffield'			A	
Clematis virginiana				A
Cleome hassleriana			N	A
Desmodium paniculataum				A
Dicentra 'Luxurient'		A		
Echinacea 'Big Sky Sundown'			A	
Eupatorium coelestinum			N	
Hibiscus moscheutos			N, A	
Kniphofia				N
Leucanthemum x *superbum* 'Shasta Daisy'			A	
Lychnis 'Maltese Cross'	A			
Monarda didyma 'Marshall's Delight'	N			
Persicaria	EM	A		
Phlox 'Franz Schubert'	A			
Polemonium viscosum 'Blue Whirl'	A			
Stokesia 'Klauss Jelitto'			A	
Symphyotrichum novae-angliae			A	
Verbena tenuisecta			A	
Veronica 'Sunny Border Blue'	EM, N			

DISCUSSION

Brown marmorated stink bugs will visit and feed on a select number of herbaceous perennial plants, especially in high population situations. Preferred feeding sites appear to be the flowers of perennials. The second most preferred feeding site is seed pods or fruiting parts of herbaceous pants. No detectable feeding or disease transmitted injury was observed during the course of this project.

BMSB can cause heavy damage to *Hibiscus moschuetos*

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