

## Effective Brown Marmorated Stink Bug Monitoring and Management in Massachusetts

Elizabeth W. Garofalo, University of Massachusetts Extension Fruit Program  
Dr. Jaime Piñero, UMass Extension Fruit Team, Stockbridge School of Agriculture

**B**rown marmorated stink bug (BMSB), is widely distributed throughout the United States. Its greatest agricultural impact has thus far been concentrated in the Mid-Atlantic states. However, its ability to travel long distances in a day's time, give it the potential to become economically damaging where previously it has been considered to be a nuisance pest in homes and other urban settings. Additionally, milder winters may contribute to decreased overwintering mortality rates. Trapping and monitoring for this pest are two important means to determine if BMSB requires management in your orchard.

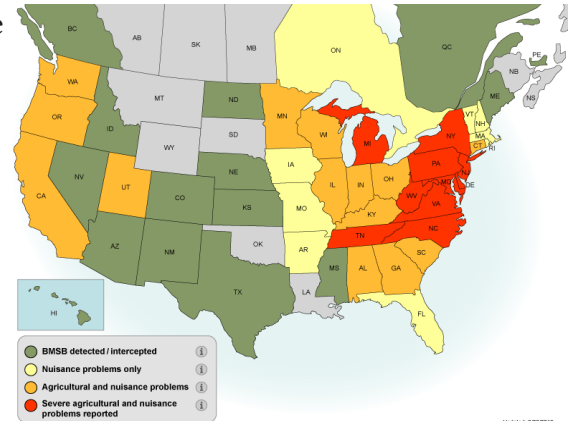
### Trapping

**D**uring harvest season BMSB populations begin to move more into orchards and other cropping systems, particularly when wild food stores are exhausted



Tedders trap for monitoring BMSB

and additional carbohydrate sources are needed for successful overwintering. This is also when we see them showing up in traps. The UMass Extension fruit team, in cooperation with private consultants, has established a trapping network across the state. Each location has a "tedders" trap (also sometimes referred to as a pyramid trap) equipped with an aggregation pheromone and kill strip. These traps are made up of a corrugated plastic pyramid shaped base with a rectangular canister on top. This cannister is retrofitted with ventilation screens to allow the aggregation pheromone placed inside to escape into the atmosphere to draw bugs in to their final resting place. The kill strip prevents them from strolling back out when they realize dinner has not been served. These traps should be deployed prior to expected movement of BMSB from wooded edges into the orchard. Once damage has been observed, it is too late to treat that particular wave of pests. Prevention of the next possible influx of damaging insects should then be the main focus. We are also currently experimenting with a new monitoring method known as the "ghost trap". This trap is based on the attract and kill concept, using the same aggregation pheromone and a length of netting that has been infused with a pyrethroid. This method is currently only available in Massachusetts for population monitoring research.



United States BMSB distribution map; [Stop BMSB.org](http://StopBMSB.org)

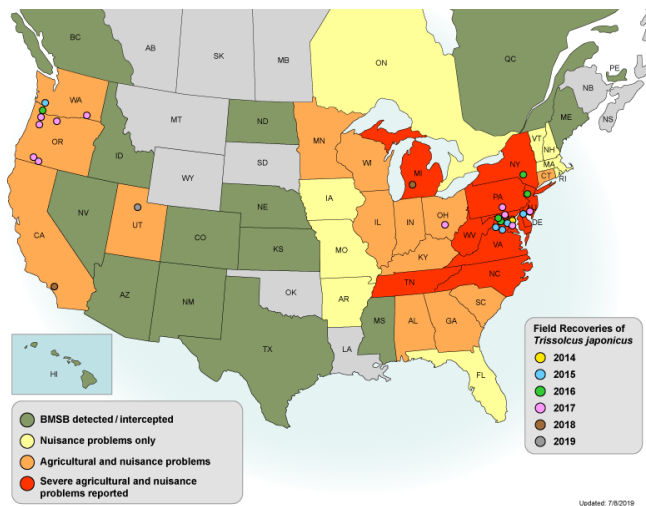
### Monitoring and Action Thresholds

**U**nfortunately, waiting until damage from stink bug feeding to become visible is not an effective IPM practice, the damage has already been done. Feeding occurs a week or more prior to visible symptoms. At harvest this is especially problematic as apples may be in storage for some time before damage is noticed. A more conservative approach must be taken if feeding damage has been observed in past years- or, if you have seen BMSB in the orchard. One BMSB observed in 100' of canopy (perimeter) row scouted is sufficient to warrant a border row insecticide application. Monitoring emphasis should be placed on blocks where suspicious, or confirmed, stink bug damage has occurred.

### Management

#### Biological enemies of BMSB:

*Trissolcus japonicus*, another insect imported from the home range of BMSB, has been shown in lab studies to preferentially parasitize BMSB eggs. This is good news as the female Samurai Wasp (as it is more commonly known) lays her eggs in the eggs of BMSB, largely sparing our native predatory stink bugs. Once the Samurai Wasp lays her eggs inside



the BMSB eggs, they hatch and the larvae feed on developing BMSB within their protective egg shells. The *T.japonicus* larvae eventually mature and emerge from the BMSB egg shells as adults which then proceed to lay more eggs in more BMSB eggs... And so on. Samurai wasp can have up to four generations a season, outdoing BMSB's one to two generations a year. Other, native U.S. parasitoid wasps also oviposit in BMSB egg masses. There are also a number of other native insects from earwigs to grasshoppers to other stink bugs that feed on the BMSB eggs, and in some cases, nymphs as well. And, when it comes to home invasions of BMSB, spiders can be handy in preying on those foolish enough to fall into and get caught in webs.

United States *Trissolcus japonicus* distribution map;  
[Stop BMSB.org](http://StopBMSB.org)

**Chemical management:**

Brown Marmorated Stink Bug (and other stink bugs)

\*=Restricted Use Pesticide

IRAC	Trade Name	Rate	REI-Hours	PHI-Days	Efficacy	Notes
none	Surround 95WP	25 to 50 lb.	4	0	moderate	OMRI listed.
3	*Warrior II	1.3 to 2.5 fl. oz.	24	21	moderate	
3A	Baythroid XL	1,4 to 2,8 fl oz	12	7	moderate	14 days application interval
3A	*Asana XL	4.8 to 14.5	12	21	moderate	
4A	Belay	6 fl oz	12	7	good	max. 12 fl oz per acre per season
3A	Danitol 2.4EC	10.7 to 21.3 fl. oz.	24	14	moderate	
4A	Actara 25WDG	4.5 to 5.5	12	varies by rate	moderate	
4A + 3A	*Endigo ZC	5 to 6 fl. oz.	24	35	High	
3A/28	Voliam Xpress	6 to 12 fl oz	24	21	high	max 31 fl oz per acre per season; 10 day application interval
4A + 28	Voliam Flexi WDG	6 to 7 oz.	12	35	moderate	max 16 oz per acre per season; 10 day application interval

Prevent resistance development by using the IRAC([Insect Resistance Action Committee](http://www.insectresistance.org)) number to rotate the materials used against this pest!