Communications Overview

* Topics:

1. Efforts of the Northeastern IPM Center
2. Control in Homes and Businesses
3. Damage in Vegetables
4. National and Regional Outreach
5. Chemical Control
6. Integrated Pest Management for BMSB
1. Efforts of the Northeastern IPM Center
Website

StopBMSB.org
Network

* 3,500 stakeholders on Center e-mail list
* 375 recipients on BMSB e-mail lists
* 4,600 regional addresses receive print
* Facebook: 267 likes
* Twitter: 1,911 followers / 225 retweets (past year)
* YouTube (over 27,000 views in past year, 52 subscribers)
* Flipboard (81 viewers)
Tracking the Brown Marmorated Stink Bug Video Series

Ten-part video series: www.StopBMSB.org/video
Our YouTube channel saw 13,855 views in past year
One-Minute Trailer on YouTube
Stink Bug in a Bottle
IPM for the Brown Marmorated Stink Bug

By William Quaintance

The brown marmorated stink bug (BMSB), Halyomorpha halys, is an invasive species native to Asia and Korea. It was first noticed in Pennsylvania in the late 1990s and was established in Pennsylvania by 2001. Genetic analyses show that the initial U.S. introduction likely came from Beijing, China, possibly through shipping containers. The bugs are growing in number and spread by hitchhiking on shipping containers and vehicles. Adults can fly, which aids in dispersal.

In early April 2011, a local spruce (Picea rubens) was killed by BMSB, and in 2014, there are several reports of BMSB in Pennsylvania. Several species have established near Lake Ontario, New York (2011, StopIPMS.org), and in California (2014).

The BMSB has an almost unrestricted distribution. It attacks more than 150 different plant species, and predates on many of the same hosts as humans, such as beans, garden vegetables, and trees. It is a threat to commercial agriculture, landscape ornamentals, and backyard gardens. It is also a structural pest, as it attacks large populations of trees, shrubs, and vines. It is a structural pest, as large populations of trees, shrubs, and vines can be attacked by the BMSB.

The BMSB is a serious pest in the United States. It can cause significant economic loss to the agriculture industry. The BMSB is a vector for several plant viruses, including apple fruit, tomato, and potato viruses. It is also a pest of apples and grapes. In 2010, the BMSB was listed as a prohibited pest in California.

There are several management strategies to control the BMSB. The most effective method is to use a combination of cultural, mechanical, and biological control methods. Cultural methods include removing infested plants, pruning trees, and destroying overwintering sites. Mechanical methods include hand-picking and using insecticides. Biological methods include introducing natural enemies and using genetic resistance.

The BMSB poses a threat to the environment and human health. It is a vector for several plant viruses, including apple fruit, tomato, and potato viruses. It is also a pest of apples and grapes. In 2010, the BMSB was listed as a prohibited pest in California.

There is a need for further research to develop effective management strategies. The BMSB is a major pest in the United States, and its impact on agriculture and the environment continues to grow. Continued research and development of effective management strategies are needed to control the BMSB and minimize its impact.
Stink Bug ID Kit

Video postcard, ID specimen, Stink Bug guide, article, factsheet, crops at risk flyer
End of section 1
2. Control in Homes and Businesses
Control in Homes and Businesses

Tracking the Brown Marmorated Stink Bug: Part 1 History and Identification
by NortheastIPM
2 years ago • 17,223 views
"Tracking the Brown Marmorated Stink Bug" shows growers and others how to identify BMSB, why this pest is important in agriculture, and what's at stake if we don't stop it. A team of 50 ...
Impact on Homes and Businesses

* For homeowners, BMSB is mainly a nuisance.
* The bug causes a lot of aggravation.
* People’s tolerance of the pest is low.
* For commercial settings, such as hotels and restaurants, the bugs’ presence can have economic consequences.
Prevent Bugs from Getting Inside

* Sealing and caulking
* BMSB congregate on southern and western sides of buildings
Prevent Bugs from Getting Inside

* Often the size of the building may prevent access points that are high off the ground from being treated, so screening and caulking from the interior will still be necessary.

* Timing: not too early, or chemicals degrade. Not too late, or they’ll already be inside.
Control after They Get Inside

* Skip insecticide
* Head straight for vacuum
* Stocking over nozzle catches them before they enter machine

Control after They Get Inside

* The aluminum foil water pan trap was the most effective device for trapping BMSB in homes during the winter and spring.

End of section 2
3. Damage in Vegetables
Damage in Vegetables

* Peppers and tomatoes: white or yellow scars
* Sunken areas in fruit with tissue collapsing below
* In corn, aborted, collapsed, or discolored kernels
* Beans: scarred, faded, or sunken areas; deformed pods
* Okra: deformed pods
End of section 3
4. National and Regional Outreach

- Cornell University, New York
- University of Delaware, Delaware
- Oregon State University, Oregon
- Rutgers University, New Jersey
- Virginia Tech University, Virginia
Outputs by the Numbers

* Over 650 peer-reviewed publications, presentations, and workshops.
BMSB present in the lower and mid-Hudson Valley in low to moderate populations, but this can change quickly and some fields may be hot spots.

Late summer/harvest is a critical time to check fields for BMSB.

Pay close attention to field edges that are bordered by trees and/or brush/weeds.

Highest populations are 90 feet in from field edges bordered by Tree of Heaven, Black Walnut, Catalpa, Maple, and Ash.
* Damage typically begins along field edges.
* Scout along edges in cool, early morning.
* Inspect fruit for damage, inspect undersides of leaves for eggs and nymphs.
* Thresholds are not established

* Source: The ‘Jentsch Lab’ web site (http://blogs.cornell.edu/jentsch/) produced 21 Extension and Outreach Publications
The stink bugs are capable of causing substantial economic losses due to quality reductions at densities as low as one bug per ear of corn.

“We did see some pretty high levels of kernel injury at all the growth stages that would likely result in quality reductions for sweet corn growers.”

BMSB found in areas of the north Willamette valley on commercial farms.

Wine quality can be compromised due to taint.

Two publications on identification available, including one in Spanish.

List of products that control stink bugs, including BMSB

Source: https://catalog.extension.oregonstate.edu/sites/catalog.extension.oregonstate.edu/files/project/pdf/em8413_0.pdf
BMSB findings have been increasing in **commercial hazelnut growing** regions in the northern Willamette Valley. BMSB may pose a significant **risk to nut quality**, causing corking during the latter portion of the season. Monitor for BMSB using commercially available **pheromone traps placed close to surrounding vegetation**. Alternate hosts include English holly, broadleaf maple, tree of heaven, and empress tree. **BMSB populations tend to build up during the latter portion of the season** and move from surrounding vegetation into orchards.

Source:
[https://catalog.extension.oregonstate.edu/sites/catalog.extension.oregonstate.edu/files/project/pdf/em8413_0.pdf](https://catalog.extension.oregonstate.edu/sites/catalog.extension.oregonstate.edu/files/project/pdf/em8413_0.pdf)
Current insecticide programs in the eastern USA are based upon pyrethroid, carbamate, organophosphorus and nicotinoid insecticides. All of these insecticides are disruptive to various natural enemies and have the potential to cause secondary pest outbreaks.

Gardeners and growers with small plots may be able to exclude BMSB with fine netting, but this is not feasible for larger farms.

Nielsen Lab: The influence of photoperiod was investigated and based on preliminary results strongly suggests that a long-day photoperiod cue is required for BMSB to leave overwintering sites. Validation of the voltinism model and tests at 8 geographic locations were run. The models suggest that photoperiod restricts populations size at certain locations.
Hamilton Lab: Results from the diel visual sampling study suggest that time of day does significantly impact the numbers found on trees during sampling. Time of day also significantly impacted the movement of nymphs within and between trees.
Barriers to Success: The most significant barrier to success has been the low population size of BMSB emerging from overwintering sites. The second barrier has been the availability of the pheromone lures in the early season. The third barrier has been the inability to continuously rear BMSB.
End of section 4
5. Chemical Control
IPM for Stink Bugs

* IPM combines biological control from predators with selective chemical application for maintaining pest populations below economic threshold levels.
* Inadequate monitoring or implementation of IPM practices will lead to unsatisfactory results.

* [https://pubs.ext.vt.edu/456/456-419/456-419-PDF.pdf](https://pubs.ext.vt.edu/456/456-419/456-419-PDF.pdf)
Some materials don’t effectively kill BMSB, and some should be delayed if spotted wing drosophila will be a target later, in order to comply with the seasonal maximum number of applications.

After application of some materials, wait at least five days before placing beehives in treated fields. If flowering plants are present in the ground cover, mow before applying.

While having utility against plum curculio, possibly the native stink bugs and a few others, the highest rate labeled for both products may not provide adequate protection from brown marmorated stink bug. For this reason, both products have received a Section 18 Emergency Exemption for use in pome and stone fruit each year since 2011.

The Section 18 label permits their use at rates higher than those described above, specifically to manage injury from brown marmorated stink bug, but must be renewed before each growing season. Contact your Extension Specialist to confirm whether a Section 18 label has been granted for the upcoming season before using these products in pome fruit or before using them in peaches and nectarines at the higher rates. REI = 12 hours; PHI = 3 days.


ENDOSULFAN (THIONEX) is an organochlorine insecticide formulated as a 50W and 3EC and registered for use in apple for controlling aphids, leafhoppers, plant bugs and stink bugs.

Due to concerns about worker health and safety and environmental effects of endosulfan use a phase-out of the product will end all uses in apple on July 31, 2015.

Uses of Thionex primarily target brown marmorated stink bug (2 lb or 1.33 qt per acre). Do not use more than two applications during the fruiting period in apples. Seasonal maximum use per acre is 4 lb or 2.66 qt.

Endosulfan is highly poisonous and must be used with caution. REI = 7 days, PHI = 21 days (EC), 20 days (WP), PHI = 7 days.
PHOSMET (IMIDAN) is a broad-spectrum organophosphate insecticide formulated as a 70W powder. It is registered for use on a number of fruit pests, including codling moth, plum curculio, redbanded leafroller, oriental fruit moth, apple maggot, and others. Imidan may not be used on sweet cherries.

While phosmet is rated as good against native stink bugs, it is ineffective against brown marmorated sting bug.

REI = 96 hours, PHI = 7 days (apple, pear, tart cherry, and plum), and 14 days (peach and nectarine).


Since it has been a long-standing policy of tree fruit Extension Specialists to not recommend the use of pyrethroids in the post-bloom period, due to their disruptive effects on natural enemies of secondary pests, we have not included them or products containing them in most cover sprays. However, the most effective products against BMSB continue to include Belay (neonicotinoid), Baythroid, Danitol, Warrior II and products containing permethrin (pyrethroids), Lannate (carbamate), and the premixtures, Engido ZC and Leverage 360.

As in recent years, Section 18 Emergency Exemptions were issued for the pyrethroid, bifenthrin (Bifenture and Brigade) and the neonicotinoid, dinotefuran (Venom and Scorpion). Residual effectiveness of products for BMSB may vary considerably, particularly following rain, and may not extend beyond about 3 days.


As in recent years, Section 18 Emergency Exemptions were issued for the pyrethroid, bifenthrin (Bifenture and Brigade) and the neonicotinoid, dinotefuran (Venom and Scorpion). Residual effectiveness of products for BMSB may vary considerably, particularly following rain, and may not extend beyond about 3 days.

For this reason, we continue to recommend the use of alternate-row-middle spray applications at about 7-day intervals during much of the growing season in pome and stone fruit. Peaches and nectarines are vulnerable to injury from BMSB from fruit-set onward while injury to apples is detectable from about mid-June onward. Section 18 Exemptions for use of bifenthrin and dinotefuran will again be submitted in advance of the 2015 season. Do not use bifenthrin in apples or stone fruit until notified of the Section 18 approval. Although Venom and Scorpion are registered for use in stone fruit, the highest labelled rate may not provide adequate BMSB control. The Section 18 label for these products enables their use at higher rates against BMSB in both crop groups, but these rates must not be used until notified of the Section 18 approval. BMSB researchers are actively evaluating promising tactics to manage BMSB effectively and reduce or eliminate the disruptive effects of current programs.


Sweet Corn and BMSB

- Brown marmorated stink bug pest pressure is typically highest on the edges of fields
- Insecticide sprays should be initiated at tasseling if bugs are present and repeated as needed until harvest
- List of insecticides registered for use on sweet corn that have demonstrated efficacy against brown marmorated stink bug in research trials.


End of section 5
6. Integrated Pest Management for BMSB
Integrated Pest Management Update for BMSB: Key Points

* Use **alternate-row-middle spray applications**: The idea of spraying alternate rows from the middle.
* Bergh has observed and read about **outbreaks of secondary pests** in apple orchards: wooly apple aphid, San Jose scale, and spider mites.
* Alternate-row-middle spray applications allow you to **reduce insecticide inputs** and reduce potential negative effects of insecticides.
* BMSB is a **landscape-scale pest**. It’s widely distributed, and can’t be controlled on a landscape scale by insecticides, traps, or other human tactics.
* **Biological control** is going to represent the ultimate solution to bring pest damage down to economically acceptable levels.

* Source: Chris Bergh, Virginia Tech University
Brown marmorated stink bug (BMSB):

* The **2014 season** began with a rather low BMSB population, which to some extent may have been due to the effects of the cold winter. As in 2013, favorable environmental conditions during the growing season resulted in lush growth of wild hosts through August, which may favor the growth of BMSB populations during the summer. However, despite BMSB captures in pheromone traps that again were highest in August and September and instances of some buildings and homes being heavily invaded between late September and early October, the general consensus was that BMSB populations were lower throughout the entire season than in 2013.

* In general, **acceptable levels** of BMSB management in commercial orchards were reported.
End of section 6
Thank You
Title