Brown Marmorated Stink Bug
First arrived in PA in mid-1990’s

42 states and 2 provinces

USDA-NIFA SCRI
www.stopbmsb.org
BMSB Identification
Look-alikes

Brown Marmorated Stink Bug
*Halyomorpha halys*

Rough Stink Bug
*Brochymena quadripustulata*

Green Stink Bug
*Chinavia hilaris*

Western Conifer Seed Bug
*Leptoglossus occidentalis*

½ inch

Brown Stink Bug
*Euschistus servus*

One Spotted Stink Bug
*Euschistus variolarius*

Dusky Stink Bug
*Euschistus tristigmus*

Boxelder Bug
*Boisea trivittata*

Banasa Stink Bug
*Banasa dimidiata*

Spined Soldier Bug
*Podisus maculiventris*

Predatory Stink Bug
*Aphoecilus cynicus*

Squash Bug
*Anasa tristis*
Life Cycle

<table>
<thead>
<tr>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
</table>

Feeding occurs

- Active
- Hibernating
Why is BMSB a Pest?

You may see the lady bugs or the stink bugs on or in the building. They may even enter guest rooms through the balcony or entrance doors.

Please do not be alarmed. They are harmless and a temporary annoyance to the area.

We apologize for any inconvenience to you.

Management and Staff

http://ucanr.edu
Damage

http://ento.psu.edu/extension/factsheets/brown-marmorated-stink-bug

Bill Shane, MSU
Specialty Crops at Risk to BMSB Damage

HIGH RISK
apple, Asian pear, beans (green, pole, snap), beee tree, edamame, eggplant, European pear, grape, hazel, Japanese pagoda tree, nectarine, okra, peach, Peking tree lilac, pepper, redbud, sweet corn, Swiss chard, tomato

MODERATE RISK
apricot, asparagus, blueberries, broccoli, cauliflower, cherry, collard, cucumber, flowering dogwood, horseradish, lima bean, littleleaf linden, serviceberry, tomatillo

LOW RISK
black gum, carrot, cranberries, garlic, ginkgo, greens, Japanese maple, kohlrabi, kousa dogwood, leeks, lettuce, many gymnosperms, onion, potato, spinach, sweet potato, turnip

UNKNOWN
almond, citrus, hops, kiwi, olive, pistachio, plum, strawberries, walnut

HOSTS
Non-Specialty Crop BMSB Hosts Contributing to Specialty Crops Risk

field corn, soybean

1—Potential risk of taint/contamination. 2—Additional risk potential due to bark feeding. 3—Considered moderate-high risk.

About BMSB
The brown marmorated stink bug, *Halyomorpha halys* (Stål), is a voracious eater that damages fruit, vegetable, and ornamental crops in North America. With funding from USDA's Specialty Crop Research Initiative, our team of more than 50 researchers is uncovering the pest's secrets to find management solutions that will protect our food, our environment, and our farms.

Learn more at StopBMSB.org.

Minnesota Degree-days

Slide courtesy of Chris Phillips, University of Minnesota
Cold tolerance

Predicted and observed BMSB: Cumulative SCP & proportion mortality

MN winter bugs $LT_{90} = -18^\circ C$ or $\sim 0^\circ F$

Cira et al 2015
SCP: n=19 bugs
Mortality: n=17 bugs/each temp (mean ± 95% confidence interval)
BMSB Survey in 2015

B. Butler
Spotted Wing Drosophila
Life Cycle

- Overwinter as adults
- Larvae tunnel in fruit
- Pupate in ground
- Life cycle 1 – 3 weeks
- 10 generations/year

Hannah Burrack, NCSU
Male Identification

Bob Koch, U of MN
Female Identification

Bob Koch, U of MN
Larva Identification

Bob Koch, Univ. of MN
<table>
<thead>
<tr>
<th>Food Preference</th>
<th>Host</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top (Filet mignon)</td>
<td>Raspberries, blackberries, blueberries</td>
</tr>
<tr>
<td></td>
<td>Plums, grapes, strawberries</td>
</tr>
<tr>
<td></td>
<td>Apples and pears if damaged</td>
</tr>
<tr>
<td>Least (Hamburger)</td>
<td>Cranberries</td>
</tr>
<tr>
<td>- Avoided</td>
<td>Cherry Tomatoes</td>
</tr>
</tbody>
</table>
Injury

Brown sunken areas, that are soft and often decayed

Eric Burkness, U of MN
Management

The “1-2-3” IPM approach for Spotted Wing Drosophila Management

<table>
<thead>
<tr>
<th>1. MONITORING</th>
<th>2. CULTURAL PRACTICES</th>
<th>3. INSECTICIDES if needed</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Monitoring" /></td>
<td><img src="image2" alt="Cultural Practices" /></td>
<td><img src="image3" alt="Insecticides" /></td>
</tr>
</tbody>
</table>

Ipm.Missouri.edu
The Pathways Early Detection Survey:
New Approach

- Pathways-based approach
- Survey monitors for new and emerging pests near urban centers
- Community gardens, CSA farms, and small immigrant farms.
- First state in the nation to survey with this approach.
<table>
<thead>
<tr>
<th>Common name</th>
<th>Scientific name</th>
<th>Primary Hosts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden twin spot moth</td>
<td><em>Chrysodeixis chalcites</em></td>
<td>Crucifers, tomato, strawberries</td>
</tr>
<tr>
<td>Swede midge</td>
<td><em>Contarinia nasturtii</em></td>
<td>Crucifers</td>
</tr>
<tr>
<td>Brown marmorated stink bug</td>
<td><em>Halymorpha halys</em></td>
<td>Corn, crucifers, legumes, onion, Solanaceae</td>
</tr>
<tr>
<td>Tomato fruit borer</td>
<td><em>Neoleucinodes elegantalis</em></td>
<td>Solanaceae</td>
</tr>
</tbody>
</table>
2016 Add Orchards

Egyptian cottonworm

Spotted lanternfly

Apple ermine moth
Contact Arrest the Pest

• Take pictures and notes

• Capture the insect or take a sample of the plant

• Report
  – mda.state.mn.us/arrestthepest
  – arrest.the.pest@state.mn.us
  – GLEDN app
  – Call 888-545-6684 and leave a detailed voicemail
Questions?