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Brown Marmorated Stink Bug

The brown marmorated stink bug, *Halyomorpha halys*, is an invasive pest that is present throughout much of the United States. The species is native to Asia and was introduced into the United States in the mid-1990s, possibly stowing away in a shipping container. The presence of this stink bug is concerning for farmers because it feeds on a large number of high-value crops and ornamental plants in its immature and adult life stages.

In the United States, the highest concentrations of brown marmorated stink bugs occur in the mid-Atlantic region, and they have been identified in 38 states and the District of Columbia. They cause major economic damage to fruit, vegetable, and field crops in the mid-Atlantic region. However, while farmers in other regions of the country are concerned about the presence of the brown marmorated stink bug, they are currently not a significant agricultural pest in most areas outside of the mid-Atlantic region.

In addition to plant damage, brown marmorated stink bugs are a nuisance to people because adult stink bugs often seek shelter to overwinter inside houses and other buildings. While large infestations can be a nuisance, they do not bite people or animals, nor do they damage buildings. When disturbed or squashed, the stink bugs release an unpleasant odor from scent glands on their abdomen.

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Identifying Brown Marmorated Stink Bugs

The adult brown marmorated stink bug is shield shaped with brown mottling. It is between 14 and 17 mm long, roughly the size of a U.S. dime. Its abdominal edges and last two antennal segments have alternating broad light and dark bands.

From May through August, adult females lay clusters of 20-30 light green or yellow, elliptical-shaped eggs on the undersides of leaves (figure 2). They usually produce one or two generations per year in cooler climates but can lay up to five generations per year in warmer climates.

Newly hatched nymphs have dark red eyes and the abdomen is yellowish, mottled with black and red. Older nymphs (figure 3) are darker with black and white bands on the legs and antennae. Similar to other stink bug species, all nymphs lack wings.

Agricultural Significance

The brown marmorated stink bug can be a serious agricultural pest and has been observed feeding successfully on numerous fruit, vegetable, and field crops including apples, apricots, Asian pears, cherries, corn (field and sweet), grapes, lima beans, nectarines and peaches, peppers, tomatoes and soybeans.

Physical damage to fruit includes pitting and scarring, sometimes leading to a mealy texture. This injury makes the fruit unmarketable as a fresh product and in severe cases can even render the crop unusable for processed products. The brown marmorated stink bug also feeds on leaves, and a characteristic symptom of leaf injury is stippled areas approximately 1/8 inch in diameter around feeding sites. In addition to physical damage, wounds caused by feeding can provide an entryway for disease to attack the host fruit or plant.

In field crops, damage caused by brown marmorated stink bug is not usually evident immediately upon visual inspection. For instance, in corn the stink bugs feed through the husk, piercing kernels and sucking out the juice resulting in shriveled kernels. Stink bug feeding in soybeans is similar to corn, where the bugs pierce the pods and suck juices out of the seeds. One visual symptom of brown marmorated

stink bug feeding in soybeans is referred to as the “stay green” effect, where injured soybean plants stay green later into the season while other plants in the field senesce as usual. Additionally, stink bug infestations in field crops are usually characterized by an “edge effect”, where stink bugs infest plants mostly in the first 30 to 40 feet from the edge of a field.

Managing this pest species is challenging because there are currently few effective pesticides that are labeled for use against them. Researchers are looking into additional ways to effectively control this stink bug species.

If you suspect you have seen brown marmorated stink bugs, contact your State Department of Agriculture, University Diagnostic Laboratory or Cooperative Extension Service for further advice on effective treatment and control recommendations.

Nuisance in Homes and Businesses

In early autumn, adult brown marmorated stink bugs look for wintering sites. During this time of year, they can often be found on the outsides of buildings or inside near doors, windows, and other entry points. They can also be found in leaf litter and vegetation outdoors. In areas where they are established, they can enter structures by the hundreds or thousands.

Once inside, they may congregate almost anywhere, including bookcases; under beds and sofas; in cracks under or behind baseboards, window and door trim; and in attics. These pests will not cause structural damage or reproduce in homes.

They do not bite people or pets and they are not known to transmit disease or cause physical harm. However, some people may be sensitive to allergens given off by the stink bugs.

Adult brown marmorated stink bugs, like other pests, can enter homes through cracks and crevices. A few simple tips to help keep them from entering homes are:

- Caulk windows inside and out.
- Weather strip entry doors and/or install door sweeps if daylight is visible around the perimeter of the door.
- Rake away all debris and edible vegetation from your home’s foundation to keep from attracting pests.
- Inspect for and seal foundation cracks to block a potential point of entry.
- Secure crawlspace entries.
- When insulating exposed plumbing pipes around the foundation or the crawlspace of your home, caulk small gaps and fill larger ones with steel wool.
- If your home has a fireplace, cap or screen the top of the chimney to keep out pests.
- Contact a pest control professional to treat surrounding vegetation near your home’s foundation, which can harbor large populations of stink bugs, with products registered for residential outdoor uses. For more information, see [Choosing a Pest Control Company](https://epa.gov/safepestcontrol/choosing-pest-control-company) <<https://epa.gov/safepestcontrol/choosing-pest-control-company>>.

Both live and dead brown marmorated stink bugs can be removed from interior areas by using a vacuum cleaner; however, the vacuum may smell of stink bugs for a period of time. Also, traps made using a metal pan filled with soapy water and a light source are attractive to stink bugs, but additional tactics must be used for complete control of brown marmorated stink bugs. Aerosol and fogger type insecticides labeled for use against domestic stink bugs will kill these pests in living areas, but they will not prevent more of the insects from emerging from cracks after they dry. Use of these insecticides is not a solution for long-term management of stink bugs.

In addition to being a nuisance in homes, brown marmorated stink bugs are also problematic for businesses, especially businesses that ship products overseas. For example, cars and other vehicles manufactured in areas of the United States where brown marmorated stink bugs are present must be fumigated or heated to temperatures over 122°F for several hours before they are allowed into some international ports. The cost of these measures, which are intended to prevent introductions of brown marmorated stink bugs to new countries, can be significant.

What EPA Is Doing

- Collaborating with the U.S. Department of Agriculture, state pesticide agencies, various federal research agencies, universities, industry and growers to develop a sustainable pest management solution.
- Participating in the brown marmorated stink bug work group.
- EPA has approved requests under the FIFRA section 18 emergency exemption program for use of the insecticides bifenthrin and dinotefuran on tree fruit to help manage populations of the brown marmorated stink bug.
- In 2011, EPA approved an additional use for an insecticide that may help manage stink bugs in organic production systems. This product contains azadirachtin and pyrethrins, which are derived from botanical ingredients. This product is approved for use on many crops where stink bug management is needed and it can be used by organic farmers.

For More Information

- [USDA: Combating the Brown Marmorated Stink Bug](https://agresearchmag.ars.usda.gov/2009/jul/bug) <https://agresearchmag.ars.usda.gov/2009/jul/bug>
- [USDA: Species Profile – The Brown Marmorated Stink Bug](https://www.invasivespeciesinfo.gov/animals/stinkbug.shtml) <https://www.invasivespeciesinfo.gov/animals/stinkbug.shtml>
- [Northeastern IPM Center: Brown Marmorated Stink Bug IPM Working Group: Overview](https://www.northeastipm.org/index.cfm/working-groups/bmsb-working-group/) <https://www.northeastipm.org/index.cfm/working-groups/bmsb-working-group/>
- [EPA: Controlling Pests around Your Home](https://epa.gov/safepestcontrol/got-pests-control-them-safely) <https://epa.gov/safepestcontrol/got-pests-control-them-safely>
- [EPA: Asthma, Cockroaches, and Other Pests](https://epa.gov/asthma) <https://epa.gov/asthma>
- [Biology, ecology, and management of brown marmorated stink bug in specialty crops](http://www.stopbmsb.org/) <http://www.stopbmsb.org/>

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LAST UPDATED ON FEBRUARY 22, 2022



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