



Brown Marmorated Stink Bug (*Halyomorpha halys*)

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Brown marmorated stink bug, *Halyomorpha halys* (Stal), family Pentatomidae, was found in Maryland in Washington and Frederick Counties in 2002. The brown marmorated stink bug is native to Asia and was introduced into the United States through shipments of trade goods. It was initially reported in the Allentown, Pennsylvania, area in 1996 and spread rapidly through the counties of Pennsylvania and into western Maryland. Since then it has spread across the State of Maryland, and its range now expands over 26 states stretching from Maine to North Carolina and in the western states of Iowa and California. This invasive species is an excellent hitchhiker and has moved through various forms of transportation including cars, trucks, campers, mobile homes, and railroads.



Adult brown marmorated stink bug



Stink bug damage on fruit

The damage on fruit is brown discoloration and dimpling around the puncture made from feeding. This renders the fruit unmarketable to the public.

When the brown marmorated stink bug first appeared in Maryland, it seemed to be a nuisance pest that overwintered in houses and commercial buildings. As the population has rapidly increased, we have seen resulting injury on vegetable and fruit crops in Western Maryland. In the summer and fall of 2010, we witnessed major losses of fruit crops including peaches and apples in Washington County. The stink bug has also been found on grapes and raspberries. Growers are reporting this pest feeding on sweet corn, soybeans, tomatoes, peppers, cucumber and eggplants.

In Maryland nurseries, we have observed the brown marmorated stink bugs feeding on crabapple, apple, Zelkova, hibiscus, lilac, dahlia, and the list is growing. The bugs tend to feed on the main trunk and major branches, extracting sap

as they feed. Often wasps will move in to feed on the sap expelled from the wounds made by the bug. At this point in time, we are unsure of the long term damage to woody plant materials.

Maryland greenhouse and cut flower operations have observed the bug feeding on chrysanthemums, zinnias and sunflowers. Homeowners report the insect on a wide range of vegetable garden crops.

Pennsylvania Extension reports that the brown marmorated stink bug will feed on a wide variety of plant material including maple, serviceberry, birch, butterfly bush, pecan, catalpa, hackberry, redbud, citrus, dogwood, fig, sunflower, honeysuckle, apple, plum, pear, rose, lilac, linden, and viburnum.

The insect produces a pungent, malodorous chemical that is readily emitted when the insect is threatened. When handling the bug, the odor is easily detected. Some Maryland fruit orchard workers have report a slight allergic reaction to the chemical released by the brown marmorated stink bug.

Identification

Brown marmorated stink bugs have a shield-shaped body that is characteristic of all stink bugs. The adults are approximately 15 - 17 mm (1/2" to 5/8") long with a mottled brownish grey color. The next to last (4th) antennal segment has a white band and several of the abdominal segments protrude from beneath the wings and are alternatively banded with black and white. The underside is white, sometimes with grey or black markings, and the legs are brown with faint white banding.

Biology of the Bug

The eggs of the brown marmorated stink bug can be found in the landscape during the summer months. They deposit elliptical-shaped eggs on the undersides of leaves. Light green to almost white in color, the eggs are deposited in batches that range from 25-30 eggs.



Nymph feeding on snapdragon



Adult brown marmorated stink bug

Note the geometric patterning of the lower abdomen and the mottled appearance of the wings as well as the white bands of the antennae.



Eggs and early instars on the underside of a leaf
(Photo by Sudeep Mathew)



Brown marmorated stink bug nymph on coleus

The brown marmorated stink bug has five nymphal stages, or instars, that range in size from 2.4 mm to 12 mm in length. Unlike the adults who blend in very well with bark, the nymphs are more brightly colored red and black. The first instars are not very active and remain around the hatched egg mass. Nymphs are characterized by dark reddish eyes and a yellowish-red abdomen with black striping. The antennae of the nymphs are similar to adult antennae—black with white banding.

Nymphs and adults feed throughout the summer and fall, and adults tend to overwinter in homes and other structures beginning in September. It was believed that there was one generation per year but further research needs to be done on its life cycle.

Physical control

For indoor stink bug control, use a vacuum to collect the insects and dispose of them. This is recommended because simply crushing the brown marmorated stink bug will trigger the malodor release. A Maryland nursery grower is vacuuming up vanilla beans first so the odor is not too strong when the bugs are vacuumed. Another option is to vacuum the stink bugs into a shop vac with filled with some soapy water.

Jeffrey Aldrich, Ashot Khrimian, and their colleagues have found that the brown marmorated stink bug is somewhat attracted to a pheromone released by the brown-winged green bug, *Plautia stali*. Aldrich and Khrimian are working at USDA's Agricultural Research Service to isolate the specific pheromone released by the brown marmorated stink bug. Their research could serve as an additional trapping tool for physical control.

Rutgers University has investigated use of black lights as well as green and yellow strobe lights with an aggregation pheromone to attract the brown



Nymph of the brown marmorated stink bug

marmorated stink bug. Traps with black lights were found to be most effective.

This fall University of Maryland Extension is conducting trials with Maryland nurseries to assess the effectiveness of black lights, multi spectrum white fluorescent bulbs and different spectrums of LED lights to develop an effective light trap to capture adults.

Chemical control

Many of the newer reduced-risk insecticides, which won't harm native beneficial insects, are ineffective against the bug. Unfortunately, since this is a non-native pest, there are few currently known biological controls within the United States. In gardens people can use residual-free pyrethrum to directly contact the bugs and kill them. Licensed landscape professionals can use pyrethroids to control the insect, but indoor control options are limited. For pesticide applications made indoors, there are a limited number of products available. Professional Pest Control Operators (PCOs) must be licensed to apply material in residential homes for control.



The adult brown marmorated stink bug found feeding on coleus

References:

- Aldrich, J., A. Khirnian, and M. Camp. 2009. Semiochemically based monitoring of the invasion of the brown marmorated stink bug and unexpected attraction of the native green stink bug (*Heteroptera: Pentatomidae*) in Maryland. *Florida Entomologist* 92: 483-491.
- Hamilton, G.C. 2010. Email Correspondence. Rutgers University, Department of Entomology: Pest Management Office. September 13, 2010.
- Jacobs, S. 2010. Brown Marmorated Stink Bug Fact Sheet. Pennsylvania State University, College of Agricultural Sciences, Department of Entomology <<http://ento.psu.edu/extension/factsheets/brown-marmorated-stink-bug>>.
- Khirnian, A., P.W. Shearer, A. Zhang, G.C. Hamilton, and J.R. Aldrich. 2008. Field trapping of the invasive brown marmorated stink bug, *Halyomorpha halys*, with Geometric Isomers of Methyl 2,4,6-Decatrienoate. *Journal of Agricultural and Food Chemistry* 56: 197-203.
- Monitoring for the Brown Marmorated Stink Bug. 2010. Rutgers New Jersey Agricultural Experiment Station <<http://njaes.rutgers.edu/stinkbug/>>.
- Office of the Secretary. 2010. "Stink Bugs Becoming a Homeowner Nuisance and Agricultural Menace." Maryland Department of Agriculture <http://www.hgic.umd.edu/content/documents/09-15-10stinkbugsMDApressrelease_000.pdf>.
- Trap Would Help Keep Stink Bugs Outdoors. August 23, 2009. *Science Daily* <<http://sciencedaily.com/releases/2009/08/090801194319.htm>>.

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