

Stink bugs have strong taste for ripe fruit

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An adult brown marmorated stink bug (*Halyomorpha halys*) can be seen here feeding on the ripe fruits of a serviceberry tree (*Amelanchier x grandiflora*).
Credit: Michael Raupp

The brown marmorated stink bug has a bad reputation. And for good reason: every summer, this pest attacks crops and invades homes, causing both sizable economic losses and a messy, smelly

nuisance—especially in the eastern United States. A new study by entomologists at the University of Maryland shows that these pests, known simply as stink bugs, have a strong preference for ripe fruit. Moreover, stink bugs track their favorite fruits throughout the growing season in an effort to maximize their access to food.

The study, published online June 25, 2015 in the *Journal of Pest Science*, reports the numbers of stink bugs feeding on nearly 4,000 fruit-bearing ornamental trees representing more than 200 popular varieties grown for sale at commercial nurseries. The researchers found that trees with ripe fruit attracted more than twice as many adult stink bugs compared with trees bearing immature fruit. Moreover, when the researchers removed all fruit from more than 30 trees, stink bugs lost interest and almost totally disappeared from those trees.

The findings could help guide strategies to control stink bug populations. By preferentially planting fruitless varieties of ornamental trees and/or planting varieties that bear fruit early in the growing season when the number of stink bugs is lower, landscapers and homeowners could become a crucial line of defense in the annual battle to control this damaging invasive pest.

"Stink bugs have captured the public's attention like no other insect in recent memory. They get into people's homes, fly around their bedrooms and spend the winter in their boxes of holiday decorations. People love to hate this bug," said Holly Martinson, a research associate in entomology at UMD and lead author of the study. "What's worse is the damage stink bugs cause to agriculture, which we have only just begun to quantify."

Because of the toll that stink bugs can exact on agricultural crops, most stink bug studies have focused on single, economically important crops such as apples, peaches, soybeans and corn. But stink bugs are currently

known to attack at least 120 plant species. Thus, Martinson and her colleagues focused on a wide variety of ornamental trees in nurseries, where food availability for stink bugs is sporadic and unpredictable, to more closely reflect the real-world dining habits of these voracious pests.

"The stink bug's generalist diet helps explain its success as an invasive species," said Michael Raupp, a professor of entomology at UMD and co-author of the study. The infamous brown [marmorated stink bug](#) was first introduced to the United States in the late 1990s, but is native to China, Taiwan and Japan. "The world is not a monoculture. It is filled with different plants fruiting at different times. Odds are that when the stink bug arrives in a new environment, something will be fruiting. The smorgasbord is always set."

The current study provides some critical intelligence in the battle against stink bugs and their annual buffet of destruction. Stink bugs spend the winter in human-made structures, where they lay dormant in eaves, rafters and storage areas. When they first emerge in the spring and begin laying eggs, their main source of food is not [agricultural crops](#), but rather fruit-bearing ornamental trees commonly found near homes and along city streets. As these sources of food become depleted and/or the fruit begins to decline in quality, stink bugs move on to other plant varieties that are hitting their peak.

In late summer and early fall, when stink bugs begin seeking shelter for the winter, they will take advantage of late-fruiting ornamental trees near homes and other buildings. Thus, limiting the availability of fruit both in spring and fall could prove to be the one-two punch needed to control [stink bug](#) populations.

"We knew that stink bugs like fruit, but it was surprising to find that the bugs could accurately track ripening fruit across space and time," said Dilip Venugopal, a research associate in entomology at UMD and co-

author of the study. "Now we can use this information for controlling and monitoring. Knowing the habits and preferences of stink bugs will save a lot of time and allow for focused management efforts."

The team is creating a list of ornamental tree species that stink bugs prefer. Eventually, this list could help inform landscapers and homeowners which species of trees to avoid planting, especially close to homes and other structures. On the other hand, stink bugs will ignore some trees altogether, either because their fruit is unappealing or they do not bear fruit at all. Building this second list of tree species that stink bugs avoid is also a high priority for the researchers.

Given the ubiquity of stink bugs in the summer months, the researchers have plans to involve the broader community in future efforts.

"We hope that our study will foster citizen science research projects in collaboration with universities," said Paula Shrewsbury, an associate professor of entomology and extension specialist at UMD who is also a co-author of the study. "For example, the [fruit](#) removal experiment we conducted can be expanded to residential landscapes, with the voluntary help of homeowners and their children."

Provided by University of Maryland

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