

Crop Susceptibility and Monitoring for Brown Marmorated Stink Bugs

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The brown marmorated stink bug (BMSB) is a threat to several California commodities. Fortunately, BMSB spread has been slow, but it is steady. Outside midtown, downtown, and Old Town Sacramento, reproducing populations have appeared in Land Park, Oak Park, River Park, Arden-Arcade, Citrus Heights, Fair Oaks, and Elk Grove. One male BMSB was found in a trap in a golf course parking lot in Freeport in late October 2015 – this find is the closest to date to farmland in Sacramento County. BMSB have become established in one or more urban areas in eight other counties in California, but no crop damage has been reported. Trapping will continue throughout the state by CDFA, UC Riverside, UC farm advisors, and some pest control advisers and growers.

Susceptible crops. Several fruit, nut, and vegetable crops are likely to be highly susceptible to damage from BMSB feeding. Among the tree fruit crops, peaches and apples have been hardest hit in the Mid-Atlantic states. Pears are also a major host crop, but there may be differences in crop susceptibility – a 2014 Oregon State University study showed that Bosc pears caged with BMSB adults were damaged far more than D’Anjou pears. Bartlett pears in the Sacramento Delta are harvested well before the second generation emerges. However, Bartletts could be provide food and shelter through much of the season due to presence of late rattail fruit and the large numbers of cracks on the old trees that could become overwintering sites, if they even would overwinter on pear trees.

Most stone fruits will likely be highly susceptible – apricot, cherry, and peach are currently on the host list with a designation of “the highest densities of bugs” (as with apples and pears). However, plums are not on the host list and no damage was found on a plum in midtown Sacramento that grew adjacent to heavily infested apple, Asian pear, and persimmon trees. Persimmons were extensively damaged in September. Citrus trees in midtown were not damaged, most likely because fruit do not ripen until winter when BMSB are overwintering. Nut crops such as almond, pistachio, and English walnut are not on the host list (black walnut is), probably because these crops are not grown much in the Mid-Atlantic. But other stink bugs do feed on almonds and pistachios, and BMSB will likely feed on them too.

Grapes are not a preferred host crop, but BMSB will feed on them on vineyard edges. Concerns from feeding include abscission of berries, increased bunch rot, tainting of wines, and nuisance problems in wineries. It remains to be seen how BMSB will affect certain vegetable and field crops. In midtown, tomatoes and beans were damaged, and very large BMSB numbers were found on sunflowers but the plants did not appear to be damaged.

The severity of crop damage, when it does occur, will likely depend on the presence of susceptible host plants nearby. Orchards in Mid-Atlantic states are typically bordered by forests, many of which contain tree of heaven, maple and other host tree species, and orchards are often near corn and soybeans, two preferred host crops. The greatest damage in these orchards is on the edges. Orchards and vineyards in the Central Valley are usually larger and most are not bordered by large numbers of host species.

BMSB phenology and detecting BMSB. BMSB overwinter as adults, which hide under bark of large trees, cracks on structures, and in narrow spaces inside buildings, including attics, false ceilings, cupboards and drawers. They begin to emerge in late winter as daylength increases, but they may also come out with warm winter temperatures. In 2014, Sacramento traps were placed March 12, and adults were found in some traps March 17. In 2015, traps were placed Feb. 24 and two days later adults were found. In 2016, four traps were placed Feb. 9 during a period of exceptionally warm weather; two days later two of the traps had four adults each.

For detection purposes, there are key time periods and methods for looking for BMSB. In 2014, the first eggs were found Sacramento May 5, and in 2015 they were found three weeks earlier on April 14. Larger numbers of egg masses appeared about 2-3 weeks after the first eggs were found. Egg masses are difficult to find where populations are low, but when present they can be found from May through early August by scanning foliage from the ground. Nymphs and new adults appear in June (1st generation), and even larger numbers are found mid-August through mid-September (2nd generation).

Monitoring for the presence of BMSB involves scanning foliage of host species, beating branches, and trapping from late spring through summer. In late summer and early fall, examine house windows, screens, and eaves periodically. BMSB can be found on foliage and seed pods of tree of heaven throughout the warm season, whereas mid- to late summer is best for finding them on fruits of Chinese pistache, maples, and unpruned privet shrubs/trees. Consider planting a few tall sunflowers (the taller the better) for use in detection. BMSB are strongly attracted to them throughout the summer and they're easily seen on the large stem and leaves. The attractiveness is only very localized, so sunflowers won't bring them in unless they're already in the area.

Scanning foliage is important to do, but is inefficient where populations are very low, and the bugs tend to hide when approached. Beat sampling should be done in the morning, or anytime temperatures are below about 70°F, as adults fly away when disturbed during warm weather. Place a tray or sheet under the branch to see the bugs. A BMSB lure could simply be placed in a host tree used for monitoring, but placing it in a trap that also contains an insecticide strip improves monitoring ability. The most effective trap has been shown to be a 4-ft. tall pyramid trap with a dark stand, placed on the ground. But several other trap types are available, including traps that can be secured to tree branches. For help with stink bug ID, place any unknown bugs in a small jar with alcohol or a plastic Ziploc bag and show it to your local UC farm advisor or county ag commissioner.

References

National BMSB site: www.StopBMSB.org

BMSB Host Plant List: www.stopbmsb.org/where-is-bmsb/host-plants/

Local BMSB Research and Reports: <http://cesacramento.ucanr.edu/BMSB/Research/>

Sacramento photos of BMSB, fruit damage, host plants, and entry into buildings:

<http://cesacramento.ucanr.edu/BMSB/Photos/>

BMSB regulations for shipping produce: <http://cesacramento.ucanr.edu/files/217836.pdf>