

28-2 — Herbivory by *Halyomorpha halys* combined with abiotic stresses alters volatile emissions in host plants

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Brown marmorated stink bug (BMSB), *Halyomorpha halys*, is an invasive species to agricultural crops as a polyphagous plant pest with potential negative effects on the food industry. A strategy to reduce the negative effects of BMSB is monitoring this species using volatile organic compound (VOC) emitted by infested host plants. This study aimed to investigate VOCs from infested/uninfested apple and pear trees under abiotic and biotic stresses to identify bug species-specific signatures to detect the BMSB. We assessed the effects of BMSB feeding combined with drought and heat stresses on VOCs emitted by apple and pear trees. Using headspace collecting device, VOCs emitted by host plants under stress conditions were collected on thermal desorption tubes and analyzed using ATD-GC-MS. Besides, VOCs emitted by BMSB were analyzed to assess how the pest responds to stress condition. According to our results, tridecane, *E*-2-decenal, and *E*-4-oxo-2-hexenal were mainly emitted by the BMSB samples. Furthermore, our results indicate that feeding by BMSB adults induced changes in specific amounts of VOCs emitted by plant hosts. Moreover, pear and apple trees exposed to abiotic stresses altered their volatile emissions. Feeding by BMSB combined with abiotic stresses significantly induced volatile emission in both plant hosts. For instance, linalool emitted by apple and pear trees at higher concentration under stress conditions, whereas *E*-3-Hexen-1-ol acetate emitted at lower concentration. In conclusion, this information may be used for identifying specific chemical signatures as biomarkers for on-site detection of this pest e.g. in shipping containers or agricultural areas.

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