GLASSY-WINGED SHARPSHOOTER INFESTATIONS INDUCE GRAPE HOSTS TO PRODUCE VOLATILE COMPOUNDS WHICH MAY ATTRACT EGG PARASITOIDS

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ABSTRACT
Natural predators or parasitoids may be attracted to prey by specific volatiles emitted from prey-infested host plants. Glassy-winged sharpshooter (GWSS), *Homalodisca vitripennis* (Germar), is a pest of particular concern as a vector of the Pierce's disease pathogen, *Xylella fastidiosa*. GWSS egg parasitoids (e.g. *Gonatocerus ashmeadi* Girault and related species) are attracted to GWSS-infested plants via olfactory cues (Krugner et al. 2008). This project evaluated infested grape hosts for production of novel or increased quantities of volatiles that may attract egg parasitoids. In a closed-chambered system, volatile compounds were captured on PorpakQ sorbent over an eight-hour period from grapes that were either infested or not infested with GWSS eggs. Volatile compounds were desorbed into methyl tert-butyl ether and analyzed by gas chromatography. Early results suggest at least one compound (putatively identified as 1,8-cineole) was present in higher amounts around infested plants than non-infested plants, and was positively associated with number of egg masses per plant. This compound subsequently will be examined for ability to attract GWSS egg parasitoids. Discovery of a host-produced compound that attracts parasitoids to GWSS egg masses could affect pest management programs. For instance, breeders could screen for host cultivars that produce higher levels of the parasitoid-attracting compound when infested. The attractant compound also could act as a lure for egg parasitoids, aiding studies that monitor parasitoid numbers.

LAYPERSON SUMMARY
Glassy-winged sharpshooter (GWSS) populations are being controlled, in part, by egg parasitoids, which apparently detect one or more volatile chemicals to find hosts with egg masses. This study examined both GWSS-infested and non-infested grapes to discover which volatile compounds, if any, may be produced by the host as a result of being infested. Early results suggest that at least one compound (putatively identified as 1,8-cineole) was present at higher concentrations around infested plants, and concentration was significantly correlated with number of egg masses on infested grapes. Following the confirmation of these results, these compounds will be tested for ability to attract parasitoids of GWSS. These results should allow breeders to select cultivars which naturally produce more parasitoid-attracting compounds when infested by GWSS (increasing efficacy of egg parasitism as a management strategy), and to provide a lure to attract egg parasitoids.

REFERENCE CITED
Krugner, R., M.W. Johnson, K.M. Daane, and J.G. Morse. 2008. Olfactory response of the egg parasitoid, *Gonatocerus ashmeadi* Girault (Hymenoptera: Mymaridae), to host plants infested by *Homalodisca vitripennis* (Germar) (Hemiptera: Cicadellidae). Biological Control 47:8-15.

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