

## Development of a SMART trap for Asian Ambrosia Beetles

Hyejin Park<sup>1</sup>, Austin Gorzlaneyk<sup>2</sup>, Jaeyoung Jeong<sup>1</sup>, Yoonsung Chung<sup>1</sup>, David Held<sup>2</sup> and Dong-Joo Kim<sup>1</sup>

<sup>1</sup>Materials Research and Education Center, Auburn University, Auburn, AL 36849, USA

<sup>2</sup>Department of Entomology and Plant Pathology, Auburn University, Auburn, AL 36849, USA

Asian ambrosia beetles of the genus *Xylosandrus* are non-native pests in the U.S. that attach both weakened and healthy trees and can potentially wipe out entire crops of nursery plants and forests. This pest threatens to reduce the productivity and profitability of commercial nursery and landscape businesses. For monitoring purposes, ethanol baited traps are commonly used to attract Asian ambrosia beetles, but these traps are nonspecific and attract many other insects as well. In this research, we are developing a SMART trap that attracts the Asian ambrosia beetle using olfactory and visual attractants. When the various solvent combinations tested, a mixture of the two in a 50/50 ratio was effective. Conophthorin effectiveness was also used to examine selective attraction of ambrosia beetles. The results of field tests showed that the combined ethanol and conophthorin attractant caught less non-target ambrosia beetles and improved the attractiveness of the trap as shown in Figure 1. LEDs (light emitting diode) emitting in green, blue, red and UV were used as visual attractants with green being the most effective attracting the beetles. In addition to the attractants, microsensors to monitor the entrance and types of insects and environment temperature were integrated. Through the system, we were able to find the relations on the time, frequency, and environment of Asian ambrosia beetles. Other findings on the behaviors of the beetles with extension activities in Alabama and Ohio are discussed.

This research was supported by USDA-SCRI (2010-51181-21169).

[1] J. Hulcr, M. Mogia, B. Isua, and V. Novotny. *Ecological Entomology*. 2007. 323:762-772.

[2] A. M. Gorzlaneyk, D. W. Held, D.-J. Kim, and C. M. Ranger. *Florida Entomologist* (in-press).

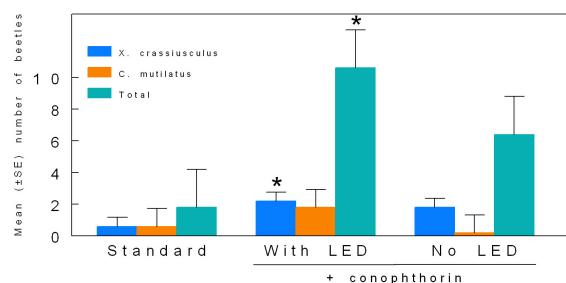


Figure 1: Effects of LED and conophthorin on selective capture of *X. crassiusculus* and total relative to the bottle trap.