MONITORING ASIAN LONGHORNED BEETLES IN MASSACHUSETTS

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ABSTRACT

An operationally effective trap to monitor the Asian longhorned beetle (*Anoplophora glabripennis* or ALB) has been a goal of the ALB eradication program since the first beetle was found in New York in 1996. Ground surveying is only ~20 percent effective at identifying infested trees and, although tree climbing is more effective, it is also highly time-consuming and expensive. Our laboratory and greenhouse bioassays showed that the two male-produced compounds, (4-(n-heptyloxy) butan-1-ol) and (4-(n-heptyloxy) butanal), were attractive to both sexes, and several plant volatiles were also attractive to both sexes of ALB adults. Our results from field experiments conducted in 2008 in China showed that ALB virgin females were highly attracted to a mixture of five plant volatiles and male-produced pheromone in Intercept® panel traps. The goal of this current project was to determine the feasibility of a trapping system for detecting ALB in the United States.

In Worcester, MA, 84 Intercept® panel traps were set up on June 16-20, 2009, at the following sites: 42 on or adjacent to the Worcester Country Club, 7 randomly distributed in Dodge Park (major cut area where all infested trees were removed), 20 traps along Nelson Street, and 12 traps in Indian Hill Park. We then added 20 traps on September 10, 2009, at 2 sites: 7 traps on Tacoma Street and Constitution Avenue, and 13 traps between Interstate 190 and Ararat Street. Traps were placed on or near maple trees, within the lower part of the tree canopy, and checked at least twice a month, starting June 15-20, 2009, and ending November 15-20, 2009. Six different lure treatments and an unbaited control were replicated 15 times for a total of 105 traps. Climbers installed the traps on a simple pulley system so that a person on a ladder could release them and lower them to the ground and then return them to the canopy after they were checked. Lures were changed and treatments were rotated between the traps within each site every month. Trap cups were filled with environmentally safe antifreeze.

A total of 9 adult ALB, all females, were caught in the traps, relatively high number compared to a total of only 29 beetles observed in the Worcester area in 2009 by residents or surveyors. The highest number of beetles was caught in the same combination of male pheromone and plant volatiles that was found most effective in China in 2008. Two particularly important locations where beetles were caught were Dodge Park,

where 2 beetles were caught in an area thought to have been cleared of all infested trees, and on Doyle Street where host trees were scarce and scattered. Guided by these trap catches, two new infested trees were found in Dodge Park. To assess efficacy of the traps (as measured by what proportion of nearby beetles were trapped), a survey of the number of new exit holes in the five nearest neighbor host trees to each of the traps is ongoing, with the help of USDA APHIS and a team from Penn State University.