Sustainable Mosquito Control: A Chemical-Free, Low-Cost Approach to Controlling Aedes aegypti, a Vector of Zika Virus

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Combinations of female wingbeat acoustic cues and visual cues were evaluated to determine their potential for use in male Aedes aegypti (L.) traps in peridomestic environments, potentially to reduce the globally spreading threat of pathogens including Zika virus, dengue, as well as chikungunya and yellow fever. A modified Centers for Disease control (CDC) light trap using a 350-500 Hz frequency-sweep broadcast from a speaker as an acoustic stimulus, combined with a black poster-board half-cylinder behind the trap as a visual stimulus, captured a significantly greater proportion of males in a laboratory arena during daylight than a CDC trap with the visual stimulus alone or a CDC trap alone without stimuli. Traps of each treatment type captured relatively more males when they were placed at darker positions in the arena. Potential applications exist for the incorporation of these findings into trapping programs to reduce transmission of human pathogens vectored by Ae. Aegypti. The goal of developing an inexpensive trapping system with significantly improved capability for attracting and capturing Ae. aegypti males was successful, and new information was obtained with respect to male attraction to acoustic and visual stimuli at different light levels.

Awards Won:

First Award of $5,000