Kasetsart J. (Nat. Sci.) 46 : 851 - 861 (2012)

Effects of Previous Exposure of *Aedes aegypti* (Diptera: Culicidae) Mosquitoes to Spatial Repellent Chemicals on BG-Sentinel™ Trap Catches

Ferdinand V. Salazar[1], Nicole L. Achee[2], John P. Grieco[2], Siripun Tuntakon[3], Suppaluck Polsomboon[1] and Theeraphap Chareonviriyaphap[1,*]

ABSTRACT

The use of the BG-Sentinel™ (BGS) trap as the pull component in a push-pull strategy to control *Aedes aegypti* mosquitoes needs to include studies on the effects of previous exposure of the mosquito to spatial repellents (the push component). The study was conducted from January 2010 to May 2011 in Pu Teuy Village, Kanchanaburi, Thailand. *Aedes aegypti* females were exposed to spatial repellents ([1, 1, 1-trichloro-2,2-bis (4-chlorophenyl) ethane] (DDT), metofluthrin and transfluthrin) and then released within a screen house containing four BGS traps to determine the effect of the spatial repellent exposure on BGS trap capture rates from non-exposed control females. This included: (i) an immediate release experiment where females exposed during 0600–1200 hours were released at 1200 hours and (ii) a delayed release experiment where females exposed during 1200–1800 hours were released at 0530 hours the following day, thus having a recovery period of nearly 12 hours. Exposure of *Ae. aegypti* females to DDT or metofluthrin did not significantly impact BGS trap capture rates compared to non-exposed control females. However, exposure to transfluthrin resulted in a significantly lowered number of recaptured treated versus control females in the immediate release trial but not in the delayed release one. The findings indicated that previous exposure of *Ae. aegypti* to spatial repellents has minor, short-lived impacts on the capture success with BGS traps.

Keywords: *Aedes aegypti*, spatial repellents, screen house, experimental huts, BG-Sentinel™ trap, push-pull stategy, Thailand

INTRODUCTION

Push-pull strategies are effective in the control of some agricultural pests (Miller and Cowles, 1990). A push-pull system combines the use of: (i) behavioral manipulation of the target pest species to repel or deter (push) them away from a resource (in the case of agricultural pest species, this would be a crop) using stimuli that render the resource unsuitable or unattractive and (ii) a device, for example a trap, which is used to remove (pull) them from the environment

1 Department of Entomology, Faculty of Agriculture, Kasetsart University, Bangkok 10900, Thailand.
2 Department of Preventive Medicine and Biometrics, Uniformed Services University of Health Sciences, Bethesda, MD 70814, U.S.A.
3 Department of Entomology, Faculty of Agriculture, Kasetsart University, Kamphaeng Sean Campus, Nakhon Pathom 73140, Thailand.
* Corresponding author, e-mail: faasthc@ku.ac.th

Received date : 06/06/12 Accepted date : 05/10/12