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COMMENTARY

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Scientific achievements and reflections after 20 years of vector biology and control research at the Pu Teuy mosquito field research station, Thailand

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Abstract

Additional vector control tools are needed to supplement current strategies to achieve malaria elimination and control of *Aedes*-borne diseases in many settings in Thailand and the Greater Mekong Sub-region. Within the next decade, the vector control community, Kasetsart University (KU), and the Ministry of Higher Education, Science, Research and Innovation must take full advantage of these tools that combine different active ingredients with different modes of action. Pu Teuy Mosquito Field Research Station (MFRS), Department of Entomology, Faculty of Agriculture, Kasetsart University (KU), Thailand was established in 2001 and has grown into a leading facility for performing high-quality vector biology and control studies and evaluation of public health insecticides that are operationally relevant. Several onsite mosquito research platforms have been established including experimental huts, a 40-m long semi-field screening enclosure, mosquito insectary, field-laboratory, and living quarters for students and researchers. Field research and assessments ranged from 'basic' investigations on mosquito biology, taxonomy and genetics to more 'applied' studies on responses of mosquitoes to insecticides including repellency, behavioural avoidance and toxicity. In the course of two decades, 51 peer-reviewed articles have been published, and 7 masters and 16 doctoral degrees in Entomology have been awarded to national and international students. Continued support of key national stakeholders will sustain MFRS as a Greater Mekong Subregion centre of excellence and a resource for both insecticide trials and entomological research.

Keywords: Semi-field system, Repellent, Experimental hut, Mosquito ecology, Vector-borne diseases, Thailand

Background

The long-term effectiveness of current approaches to malaria control such as artemisinin-based combination therapy, indoor residual spraying and insecticide-treated materials are undermined by increasing antiparasitic drug resistance, physiological resistance and behavioural responses of mosquito vectors to insecticides [1, 2]. Controlling *Aedes* species, a cosmo tropical vector of dengue, yellow fever, Chikungunya and Nipah viruses remains difficult due to weak evidence from appropriately designed trials to reach a conclusion about any of the control methods available [3, 4] Consequently, there is an increasing need for new strategies that exploit novel aspects of vector genetics, physiology, behaviour and ecology. These innovations must be drawn from an understanding of vector biology within natural transmission settings if they are to yield rapid, locally appropriate

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