

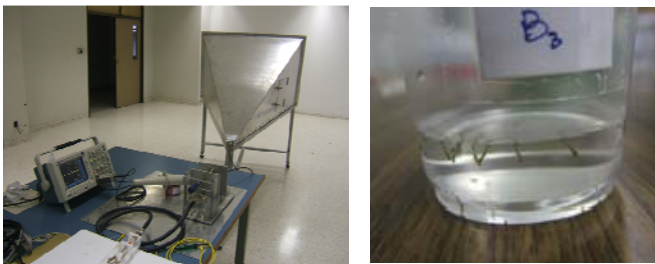
MOSQUITO LARVA INVIABILITY STUDY THROUGH PULSED ELECTRIC FIELD EXPOSURES

Nakarin Pinpathomrat¹, Teerayut Kraweefrengfu¹, Atthawit Laphodom¹, N. E. Islam², and Phumin Kirawanich¹

¹Electrical Engineering Department, Mahidol University,
Salaya, Nakhon Pathom 73170 THAILAND

²Department of Electrical & Computer Engineering,
University of Missouri, Columbia, Missouri, 65211 USA

There are many methods used for mosquito control, for example, habitat modification, such as removing stagnant water from potential breeding areas, chemical pesticide, natural predators, such as dragonflies and larvae-eating fish, and trapping. The principal objective of this work is to study the effects of pulsed electric fields (PEFs) on mosquito larva inviability. Fourth instar larvae of *Culex quinquefasciatus*¹ were hand-graded from the same stagnant water supply and divided into 24 groups of 20 larvae for inviability testing. There were a total of 4 experimental sets for 4 different combinations of exposure parameters. Each set consists of three groups of treatment replications and three groups of non-treated larvae as associated controls. Each group was placed in transparent plastic cup and firmly situated inside the laboratory-constructed treatment chamber except the control. The pulse forming line (PFL) was used as a pulse generator. The cups were incubated for 5 days, i.e. close to normal hatching time for mosquito larvae, at room temperature of approximately 28°C for normal morphogenesis to take place. The inviability was determined at 24, 48, 72, 96 and 120 hours. The mosquito larvae were considered inviable if deceased. The effects of PEFs can be observed when the exposure parameters were 5 kV-15 min and 15 kV-5 min.



1. S. B. McIver, "Comparative study of antennal sense organs of female Culicine mosquitoes," *Can Entomol*, vol. 102, pp. 1258–1267, 1970.

* Work supported by The Department of Electrical Engineering, Mahidol University, Thailand