



Queensland Government

Queensland Health

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Our Ref:

RE: BG sentinel mosquito trap

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Dear Sir/Mam:

I am the Director, Medical Entomology, at the Tropical Public Health Unit (Queensland Health) located in Cairns Australia. I am also jointly employed as a researcher with James Cook University. I am responsible for programs managing vector-borne disease in north Queensland, an area with outbreaks of dengue fever, Japanese encephalitis and Ross River virus to name a few. In the last decade, we have had several large outbreaks of dengue. Thus, much of my research effort has focused on this disease.

Dengue is carried by only one species of mosquito, a highly domesticated mosquito known as *Aedes aegypti*. Because this mosquito breeds in water-holding containers found in yards; such as tyres, buckets and birdbaths, surveillance and control must target yards and premises. Traditional surveillance methods employ teams who visit houses and yards to remove or treat containers that breed this mosquito. These surveys are laborious, and often do not provide a good estimate of the actual number of mosquitoes present in an area. If a mosquito control or eradication campaign is operating in an area, the managers must have an idea if populations of dengue mosquitoes are high enough for epidemic transmission of dengue. Current methods employing indices based upon breeding sites are very inaccurate. For example, if 100 houses are surveyed, and 5 breeding sites are encountered, the index would be 5. However, the index does not distinguish the size of the container and the number of larvae within it. For example, 5 coke bottles with 1 larvae each would result in the same index as 5 tyres with 100 larvae each. Clearly, an index that measures the number of adult mosquitoes that can actually transmit dengue virus is called for.

Unfortunately, the traditional adult mosquito traps require carbon dioxide (dry ice) and are not very effective for *Ae. aegypti*. Thus, it was with great anticipation that I heard that Dr. Geier's trap, the BG Sentinel, was specifically designed to collect *Ae. aegypti*. I established a collaboration with Dr Geier, and conducted research to see if the trap was more effective than traditional methods. The research clearly showed that the BG sentinel trap was highly effective at collecting dengue mosquitoes, more so than other methods. Furthermore, it did not require costly dry ice, and could provide a collection within 24 hr.

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We have begun to employ the BG sentinel trap to see if dengue mosquitoes are present in an area. From this, we can develop a risk-assessment of dengue transmission in an area, and target high risk areas for control. The BG sentinel trap can also be employed to trap mosquitoes within a house. Thus, it may provide some level of protection in dengue-infested tropical areas. We are currently conducting research to optimise this use.

In conclusion, I think the BG sentinel trap is an excellent trap to collect and, potentially, control dengue mosquitoes. It may also have applications to other mosquitoes; for example, we collect large numbers of *Culex* mosquitoes known to carry West Nile virus in the USA. If you have any questions, I can be reached at (61)-740-503-619 or email at Scott_ritchie@health.qld.gov.au

Sincerely,

Scott A. Ritchie, PhD
Medical Entomologist