Application of Mosquito Sampling Count and Geospatial Methods to Improve Dengue Vector Surveillance

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Dengue hemorrhagic fever is a major public health problem in several countries around the world. Dengue vector surveillance is an important methodology to determine when and where to take the control action. We used a combination of the Global Positioning System (GPS)/Geographic Information System (GIS) technology and the immature sampling count method to improve dengue vector surveillance. Both complete count and sampling count methods were used simultaneously to collect immature dengue vectors in all houses and all containers in one village in eastern Thailand to determine the efficiency of the sampling count technique. A hand-held GPS unit was used to record the location of surveyed houses. Linear regression indicated a high correlation between total immature populations resulting from the complete count and estimates from sampling count of immature stages. The immature survey data and the GPS coordinates of house location were combined into GIS maps showing distribution of immature density and clustering of immature stages and positive containers in the study area. This approach could be used to improve the efficiency and accuracy of dengue vector surveillance for targeting vector control.

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