Developing Effective Solar-Powered Agitators for Mosquito Control in Stagnant Water

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Mosquitoes are vectors for many dangerous diseases such as Malaria, Dengue, Yellow Fever, West Nile etc. Mosquito transmitted diseases occur mostly in tropical, developing countries and create public health crises due to lack of adequate resources. Malaria took 584,000 lives in 2013. Mosquito control efforts focus on reducing the population of mosquitoes. The many mosquito control strategies such as biocontrol using fish, spraying insecticides, or using tarps to suffocate the larvae etc. have substantial drawbacks. These methods are environmentally hazardous, expensive, inefficient, bulky, or are power-hungry. Mosquitoes breed in stagnant water. They cannot breed in agitated water or running water. The objective of this project is to make water agitators that are environmentally safe, efficient, and cost-effective. Here three water agitators are engineered. They are self-sustaining, lightweight, mobile, and have minimal potential for misuse. The agitators consume solar energy that occurs abundantly in tropical countries. They are self propelling and do not require maintenance. They are designed to be inexpensive, reusable, and can be mass-produced. Agitators can cover a much larger area of water compared to their size and target three different types of water areas. Applications include open rain jars, tire tracks, mining pits, ponds etc. Agitators were tested with live mosquito larvae/pupae. The number of live larvae before and after tests were recorded. The survival rates of mosquitoes with agitator are significantly less than those without agitation. Other tests included noise tests, wave amplitude analysis, and velocity tests. Future work includes large scale implementation and testing.

Awards Won:
Fourth Award of $500