

Documented Resistance to Pesticides:

- 1) **Rawlins SC. 1998 Oct. Spatial distribution of insecticide resistance in Caribbean populations of *Aedes aegypti* and its significance.** Rev Panam Salud Publica 4(4):243-51.

Keywords: adulticid*/ larvicid*/ *Aedes* /

Abstract: To monitor resistance to insecticides, bioassays were performed on 102 strains of the dengue vector *Aedes aegypti* (L.) from 16 countries ranging from Suriname in South America and through the chain of Caribbean Islands to the Bahamas, where the larvicide temephos and the adulticide malathion have been in use for 15 to 30 years. There was wide variation in the sensitivity to the larvicide in mosquito populations within and among countries. Mosquito strains in some countries such as Antigua, St. Lucia, and Tortola had consistently high resistance ratios (RR) to temephos, ranging from 5.3 to 17.7. In another group of countries-- e.g., Anguilla and Curacao--mosquitoes had mixed levels of resistance to temephos (RR = 2.5-10.6), and in a third group of countries, including St. Kitts, Barbados, Jamaica, and Suriname, mosquitoes had consistently low levels of resistance to temephos (RR = 1-4.6) ($P < 0.05$). On occasion significantly different levels of resistance were recorded from neighboring *A. aegypti* communities, which suggests there is little genetic exchange among populations. The impact of larval resistance expressed itself as reduced efficacy of temephos to kill mosquitoes when strains were treated in the laboratory or in the field in large container environments with recommended dosages. **Although a sensitive strain continued to be completely controlled for up to 7 weeks, the most resistant strains had 24% survival after the first week. By week 6, 60% to 75% of all resistant strains of larvae were surviving the larval period.** Responses to malathion in adult *A. aegypti* varied from a sensitive population in Suriname (RR = 1.3) to resistant strains in St. Vincent (RR = 4.4), Dominica (RR = 4.2), and Trinidad (RR = 4.0); however, resistance was generally not on the scale of that observed to temephos in the larval stages and had increased only slightly when compared to the levels that existed 3 to 4 years ago. Suggestions are made for a pesticide usage policy for the Caribbean region, with modifications for individual countries. This would be formulated based on each country's insecticide-resistance profile. **Use of physical and biological control strategies would play a more critical role than the use of insecticides.**

2) **Tidwell MA**, Williams DC, Gwinn TA, Pena CJ, Tedders SH, Gonzalvez GE, Mekuria Y. 1994 Sep. Emergency control of *Aedes aegypti* in the Dominican Republic using the Scorpion 20 ULV forced-air generator. *J Am Mosq Control Assoc* 10(3):403-6.

Keywords: adulticide + larvicide/ *Aedes* / Bti/ permethrin/

Abstract: In an effort to develop a more effective measure for use in emergency control of the dengue vector *Aedes aegypti*. applications of a combination of a larvicide (*Bacillus thuringiensis israelensis* [B.t.i.]) and an adulticide (permethrin) were made using a truck-mounted forced-air generator (Scorpion 20) and evaluated in the Dominican Republic. This method has the potential to simultaneously control adults and larvae. In bioassay cages placed in household water containers at the time of application, **larval mortalities were 95.1 and 100% for 2 application rates of permethrin mixed with B.t.i. Adult mortalities were not as impressive, probably because of resistance to permethrin. Higher adult mortality in caged specimens (78.5%) and a substantial reduction in the natural population (68.4%) of *Ae. aegypti* were obtained following a 2.1-g AI/ha application of deltamethrin alone.**