

COMPARISON OF THE VARIOUS FORMS OF INSECTICIDES FOR ADULT MOSQUITO CONTROL IN RESIDENTIAL TAIPEI, TAIWAN, APRIL-SEPTEMBER 1971¹

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INTRODUCTION. The mosquito problem in Taipei, Taiwan is similar to that seen in many other urban areas in the Far East. The city has both crowded metropolitan areas and sparsely populated semi-rural areas. Rice paddies are often adjacent to housing areas, well-watered gardens are common, and open drainage ditches and sewers are everywhere. Due to frequent rains and a high water table, plus faulty drainage, polluted standing water is found virtually everywhere in the city. These conditions provide extensive mosquito breeding sites for *Culex fatigans* Wiedemann and *Armigeres subalbatus* (Coquillett) throughout Taipei.

Efforts to control mosquitoes by employing source reduction techniques in the aquatic stages have been unsuccessful due to the large number of breeding sites. As a result, most efforts to control mosquitoes are adulticiding programs, by which fairly quick, though temporary, mosquito control is realized. The purpose of this study was to ascertain which standard insecticides and which form of these insecticides would provide the best control over the adult *C. fatigans* and *Ar. subalbatus* mosquitoes in residential Taipei.

METHODS AND MATERIALS. Two communities populated almost exclusively by American military personnel and their families on the outskirts of Taipei were used for this study. The Tein Mou and U.S. Naval Hospital areas are a few meters above sea level, as is metropolitan Taipei. The Grass Mountain Area is composed of three housing communities, "C," "E," and "F" approximately 300 meters above sea level. Ultraviolet light traps were set up as follows: one in the hospital compound, two at opposite ends of the Tien Mou housing areas, and one at each of the three Grass Mountain housing areas. Mosquitoes were captured in cloth net bags fastened to the bottoms of the traps and brought to the laboratory every other day for sorting and counting. Insecticide dusts were dispersed from a Mity Mite back pack mounted on the back of a jeep. Thermal aerosol fogs of insecticides were likewise dispersed from the back of a jeep from two Dyna-fog 80 Swing Foggers. All dispersals took place in the evening from sundown to not more than two hours after sundown. Area "F" on Grass Mountain was left untreated as the control area.

One percent Baytex fog and 5 percent malathion fog were dispersed at the rate of 40 gals/hr. at 5 mph. Five percent malathion dust and 5 percent Sevin dust were dispersed at 6 pounds per acre. There was typically an excellent thermal inversion from about 15 minutes before sundown until 2 hours after sundown and little or no breeze, so that maximum effectiveness from both the fogs and the dusts could be expected. Two typhoons, one in late July and the second in late September resulted in dramatic drops in mosquito counts immediately following.

¹ This study was supported through funds provided by the Bureau of Medicine and Surgery, Navy Department, for Work Unit MR041.09.010083B OGX.

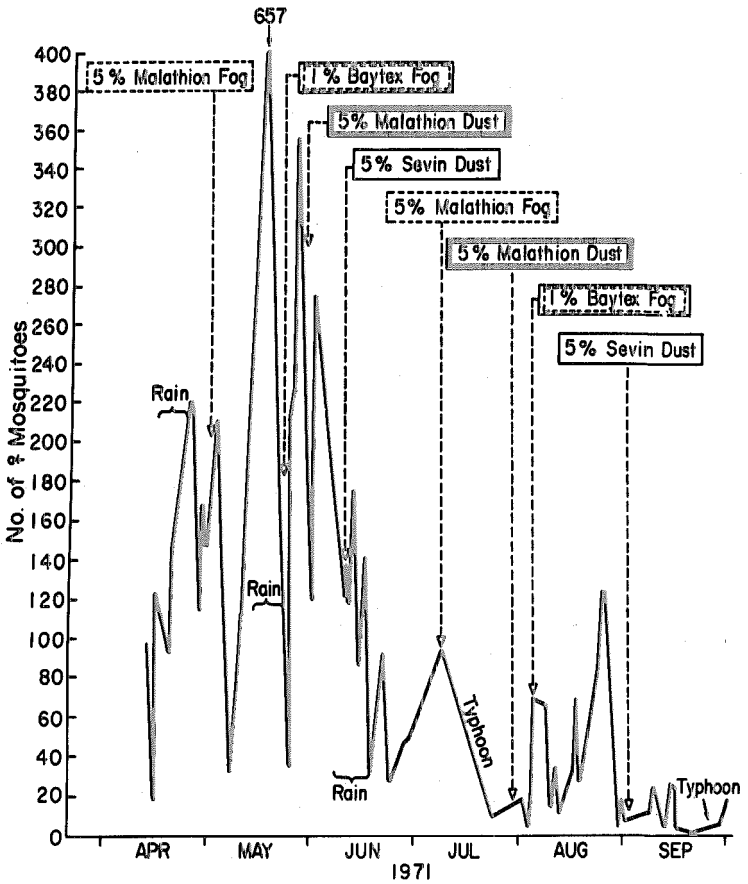
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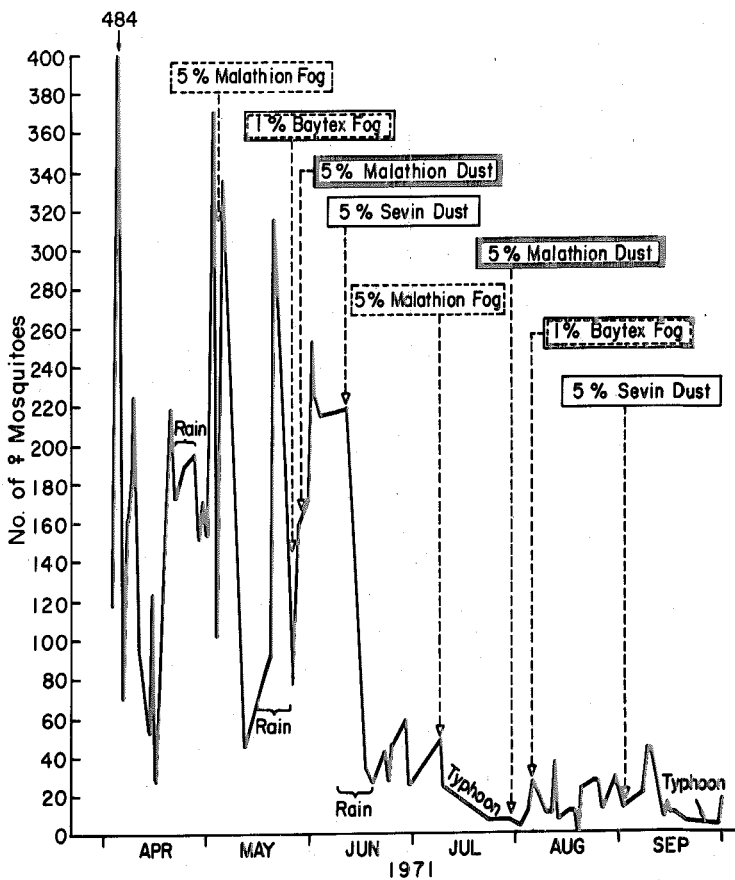
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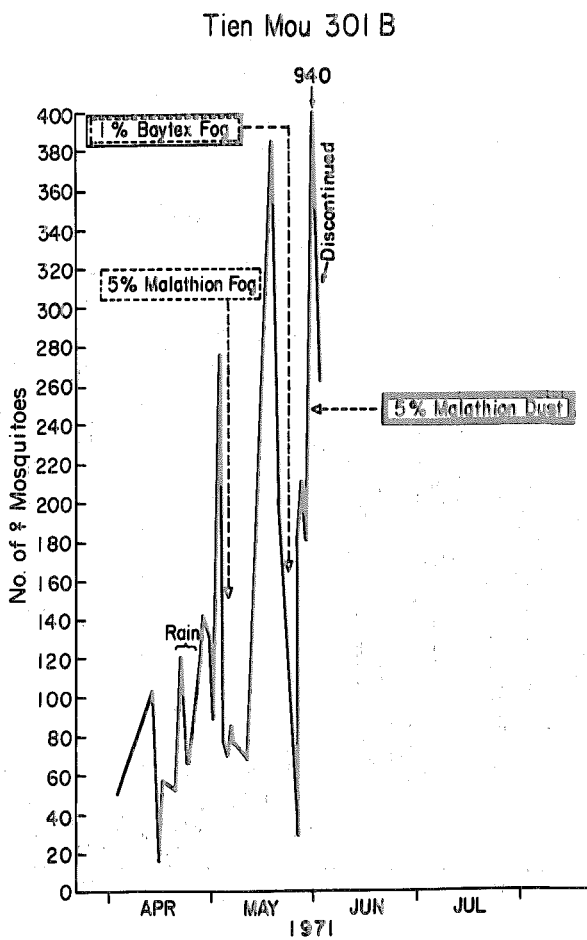


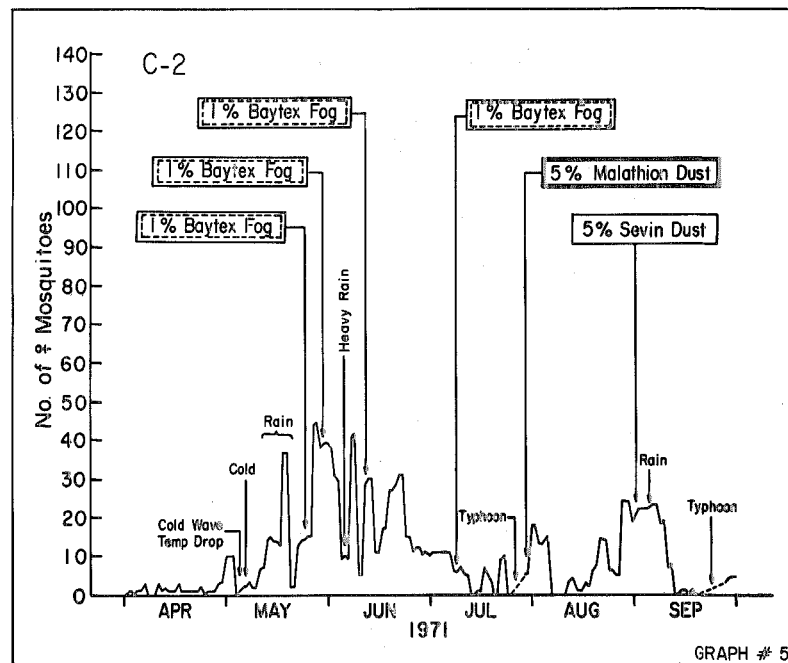
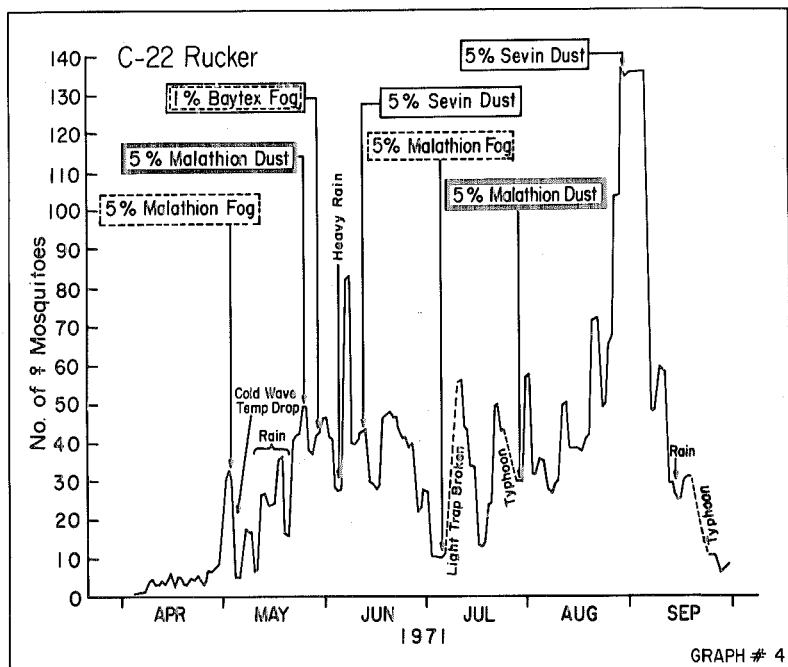
GRAPH # 1

Hospital



GRAPH # 2





RESULTS. The results are conveniently expressed in tabular form (Table 1) and on graphs (Graphs 1-6).

Table 1. Comments on the number of mosquitoes in light traps following the application of different insecticides at the various sites.

5% Malathion Fog.

Seven applications resulted in immediate reduction or continued reduction of the numbers of mosquitoes on four occasions; twice there was a 2-day delay before a decline was noted, and in one instance no valid conclusions could be drawn due to a faulty light trap.

5% Malathion Dust.

Of eight applications, six resulted in no change or a continuation of the trend of the mosquito population for 2-3 days before a decline was noted; in two instances, immediate declines were noted,

but of these the numbers of mosquitoes again increased 2-3 days later.

1% Baytex Fog.

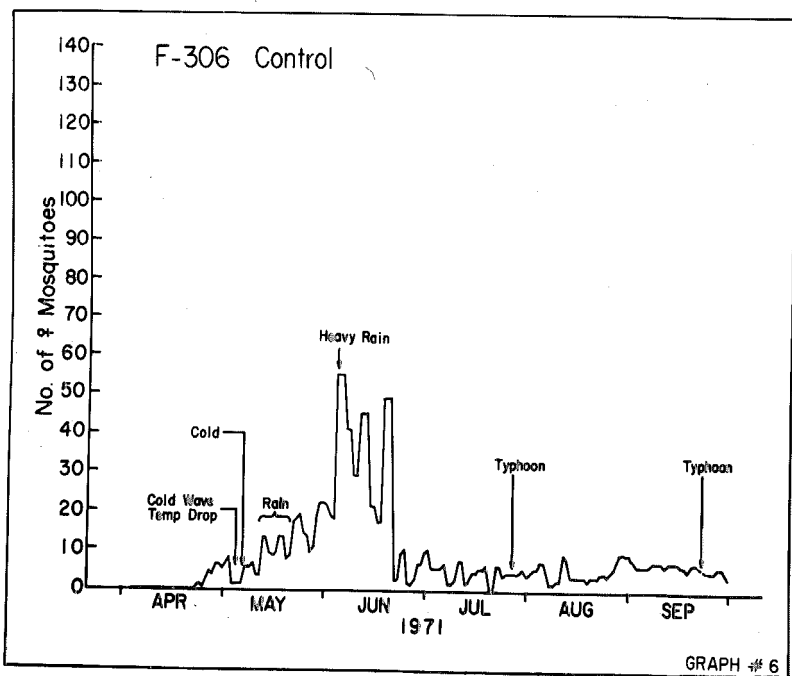
Nine applications showed rather inconsistent results. In seven of the treated areas, five continued to rise 2-5 days before any decline for 2-3 days, then sharply increased again.

5% Sevin Dust.

Of six applications, there was an immediate decline in three of the areas, in the other three areas there was a 5-6 day delay before a decline could be noted.

Graphs 1-6 indicate the mosquito light trap catches and the applications of the various insecticides for each location for the entire mosquito season.

SUMMARY. For control of pest mosquitoes in Taipei's residential areas, 5 percent malathion fog was effective almost im-



mediately and the control usually lasted for 4-5 days. The effects of the 1 percent Baytex fog were often unnoticed for 2-5 days, then appeared to express some control. Both the 5 percent malathion dust and the 5 percent Sevin dust typically showed 2-3 and 5-6 day delays, respectively, before any reduction of the adult mosquitoes could be noted. The adult mosquito counts in all areas which were treated with the 5 percent Sevin dust decreased for longer periods of time as compared to other materials used.

ACKNOWLEDGMENTS. The authors wish to express sincere appreciation to the Sanitation Office, U.S. Naval Hospital, Taipei, Taiwan for continuous assistance during this study; Special Services Office, HSA Taipei, for providing vehicles for this study; Union Carbide Company for providing the Sevin dust; American Cyanamid Company for providing the malathion; Chemagro Company for providing the Baytex; and Mr. Bob Knowles for furnishing the Buffalo Turbine Mity Mite backpack that was used throughout this study.

UTAH MOSQUITO ABATEMENT ASSOCIATION

Eighty-five per cent of the people in the state of Utah are now living within the boundaries of organized mosquito abatement districts.

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