The Field Efficacy of Commercial Mosquito Traps Utilized in Polk County, Florida April 16, 2002 – May 18, 2002.

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INTRODUCTION

American Biophysics Corporation (ABC), Applica Consumer Products, Inc. (ACP), Coleman Company, Inc., EPAR LLC, Flowtron Outdoor Products (FOP), and Lentek International, Inc. (Lentek) have recently introduced a new generation of mosquito traps designed to control mosquitoes by "removal trapping". Removal trapping is defined as eradication of a pest by capturing and removing a significant number of reproductive females from the population. Without replacement, the population collapses, resulting in control. These traps are quite different than conventional black light, "bug zappers" that have been proven ineffective in that they employ a variety of powerful attractants, varying by manufacturer. These attractants include CO2, heat, Octenol, airflow, color, light, and sound. The traps are being marketed as an effective, environmentally compatible alternative to chemical control.

Although there has been much research evaluating bug-zappers, there have been no similar studies of these new traps, particularly in a side-by-side comparison. This study compared, under scientifically controlled and replicated conditions, the catch from these new generation traps. Results from this project provides consumers information needed to adequately assess the usefulness of these systems.

MATERIALS AND METHODS

The efficacy of mosquito traps was compared in testing conducted at the northern edge of the Lakeland Wetlands in conjunction with Polk County Parks and Recreation in southern Polk County, Florida. The Lakeland Wetlands area consists primarily of submerged lands with cattle grazing along the edges. This local was chosen for its accessibility and the continuous availability of nuisance mosquitoes. The mosquitoes present there are largely *Psorophora columbiae* and *Culex nigripalpus*. In addition, other mosquitoes include *Aedes albopictus, Psorophora ciliata, Aedes taeniorhynchus* (black salt marsh mosquito), *Anophles crucians, Coquillettidia perturbans,* and *Culicoides barbosai.*

The mosquito traps evaluated were the ABC's Mosquito Magnet Pro (MM Pro) and Liberty (MM Liberty) Traps, Coleman Company, Inc. Mosquito Deleto (Coleman), ACP's Sonic Web, EPAR's Mosquito Killer, FOP's Powertrap (Flowtron) and Lentek's Mosquito Trap (Lentek). All tested products were purchased randomly from retailers in late March 2002.

Each trap was operated simultaneously at locations separated by a distance of 20 yards. The traps were rotated through each location. All insects drawn to the traps were collected and counted. Mosquitoes will be identified to family. The traps were operated

continuously and emptied of captured mosquitoes on a regular basis (3X week). Weather data was recorded using a portable datalogger. Traps were supplied with attractants (i.e., CO_2, propane, and octenol) as prescribed by the manufacturer.

RESULTS

The Coleman Company, Inc. Mosquito Deleto trap yielded very sporadic capture data due to operational difficulties with the unit. The trap caught fire and was removed from the study by the first site rotation on April 24.

A total of 9,739 mosquitoes and 128 yellow flies (*Diachlorus ferrugatus*) were counted in the study. These insects were tabulated and sent to the University of Florida, Gainesville for identification to Family. Analysis of variance was conducted using t-Test: Two – Sample Assuming Unequal Variances for data normalized data (square root of n + 1).

A graphic presentation of the total number of mosquitoes captured by each trap is presented in Figures 1-2.

The duration of time that a propane or CO2 tank could be used before refill was required for operation is as follows:

> The Epar units used one 20 pound refillable CO2 tank per trap that provided 5-6 days of continuous operation.
>
> The Lentek units used one 20 pound standard refillable Propane tank that provided 32-48 days of continuous operation.
>
> The MM Pro used one 20 pound standard refillable Propane tank that provided 18-20 days of continuous operation.
>
> The MM Liberty used one 20 pound standard refillable Propane tank that provided 22-24 days of continuous operation.

DISCUSSION

The MM Pro, MM Liberty, and Lentek were significantly better than the Epar, Flowtron, or Sonic Web in the collection of mosquitoes attracted to the traps as presented in Figure 1. The statistical analysis shows no statistical difference in mosquito capture between MM Pro, MM Liberty, and Lentek.

The Lentek was significantly better than all other traps in collecting the yellow fly (*Diachlorus ferrugatus*) attracted to the traps as presented in Figure 2. The yellow fly is a painful biter found across the American southeast and along eastern coastal areas.

The Flowtron, MM Pro, MM Liberty, and Sonic Eb traps all had octenol cartridges as added attractants. These were replaced about mid study (4-26). The MM Liberty is designed as a counter flow CO2 trap with a side door for collection bag removal. This door and latch failed to properly seal the chamber, causing trap failure early in the study.

The door on this unit was thereafter taped shut after each mosquito removal to insure proper operation. This is a major fault with the trap. Homeowners can not be expected to follow this necessary and unsightly recommendation.

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FIGURES
Figure 1: Comparison of Total Mosquito Capture.

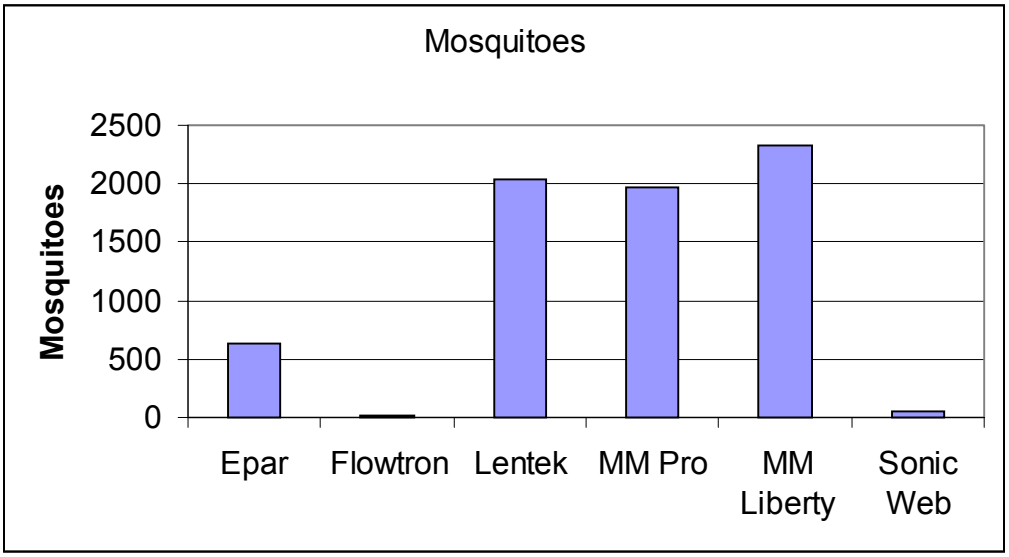

Figure 2: Comparison of Total Yellow Fly (*Diachlorus ferrugatus*) Capture.