ENY692

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Mosquito Control Devices and Services for Florida Homeowners[1]

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Be an Educated Consumer!

There are many devices on the market advertised to control mosquitoes. The advertisements for these devices are aimed at the average homeowner. How do you know if they will work? It is unfortunate that many advertisements take advantage of the concerns we have to protect family members from mosquito-borne disease. This factsheet is provided to assist homeowners in smart decision-making when it comes to protecting the health of you and your family.

Mosquito Control vs. Mosquito-borne Disease Prevention

Mosquito control and *mosquito-borne disease prevention* are not the same. Mosquito control involves reducing populations of mosquitoes, which might possibly lead to a reduction in the number of mosquito bites in a given area. Mosquito-borne disease prevention involves personal protection - wearing mosquito repellent. So, what is the difference between the two? With mosquito control, preventing every mosquito bite is not the goal; with mosquito-borne disease prevention, individuals take responsibility to protect themselves from *any* mosquito bite.

The devices and services discussed here are not a means of disease prevention; these products are used for mosquito control.

Mosquito Trapping Devices

Many mosquito trapping devices are based on generating carbon dioxide (CO_2) to lure the mosquitoes to the device. Once in the vicinity of the fan on the device, the mosquitoes are sucked up into the device and into a collection bag where they will die. These devices retail for $300.00 – $1400.00 for the initial investment.

The CO_2 baited traps will catch mosquitoes. However, even an impressively large collection, a “bag full", may be a minute percentage of all the blood-seeking females in the area and this will not likely impact large populations of mosquitoes. There are no peer-reviewed, scientific publications that show the devices to be effective for actually controlling mosquitoes, reducing their populations, or reducing biting rates under the range of conditions likely to be found in different homes. Until such

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scientific evidence exists, one must be careful to avoid unrealistic expectations for these devices as an effective mosquito control strategy for individual homes.

Some advertisements claim that the trap will decimate a mosquito population in 4 – 6 weeks. The life span of an adult mosquito varies with species and temperature, but populations of many mosquitoes that are the target of these devices will often begin to decline naturally within a few weeks if left alone, particularly if rainfall is intermittent and if professional mosquito control is conducted in the area. There is no evidence at this time that mosquito traps can play a noticeable role in the decline of mosquito populations.

There may be circumstances where the mosquito trapping devices can indeed reduce mosquito-biting activity in a small area for a specific time period. Several factors would have to be optimal for this to be true:

- There should be little wind to disrupt the attractive CO_2 cloud.
- The mosquito numbers are low to begin with.
- The attractant plume of CO_2 is large enough to outcompete other attractants, i.e., the attraction of groups of people or animals.

As with other such products, "buyer beware" is still good advice. The only available information on how well these devices work are testimonials from those who have purchased them. Such testimonials do not incorporate controlled studies or proper data analysis.

Mosquito Control Timed Spray Systems

A timed spray system is a service that can be purchased by homeowners for killing mosquitoes. The systems include insecticide spray nozzles connected by tubing that is installed around fence lines and the perimeter of the house. The tubing is connected to a reservoir of insecticide (30 - 255 gallons); release of the insecticide is regulated by a timer.

In order to reduce the number of biting mosquitoes of any given species, one must monitor several variables and respond with appropriate control measures that are specific for the intended pest species. This is the science (and the art) of mosquito surveillance. Surveillance should include:

- Proper identification of the pest species
- Considerations of the behavior of various species
- Population density monitoring; landing rates, trap counts, larval development
- Weather monitoring

Why is surveillace and precise identification of target species important?

- Effective and efficient mosquito control programs respond to mosquito density. It is inappropriate to apply an insecticide to kill adult mosquitoes if there are no adult mosquitoes present at the time of the application.
- Proper timing of application is critical. It can be very difficult to time a mosquito adulticide application that specifically targets resting or flying mosquitoes.
- Any application that relies on time-released spraying without surveillance and decision making by humans, leads to inappropriate applications. Inappropriate applications can contribute to insecticide tolerance and resistance in insects and may contribute to environmental problems.

Mosquito control misting systems, or any other system that simply releases insecticides on a timer, whether it is a barrier application or to kill flying mosquitoes, lack the human element that is critical for effective and environmentally proper mosquito control. It is against good mosquito control practices to advocate automatic release of pesticides simply based on a timer.

Ultrasonic Devices

Ultrasonic devices include products that are designed to be worn around the neck or wrist, or attached to a belt, to repel mosquitoes. The devices create sounds that mimic male mosquitoes or dragonflies and theoretically will "frighten" the female mosquitoes. These claims are unsubstantiated. Female mosquitoes in search of a blood meal do not fly away from male mosquitoes; and neither males nor females retreat from areas where dragonflies are present.

In August 2002, the Federal Trade Commission (FTC) charged a Florida company with making false and unsubstantiated claims in advertising for the MosquitoContro products.* These products are battery-operated, cost from $10 - $20, and include a bracelet, a key chain, and a tabletop model. According to the FTC, there is no competent or reliable evidence to support the claims made for the products, and that the claims are false.

There are other manufacturers of ultrasonic devices and there are several versions available in stores. These devices do not kill mosquitoes, repel biting mosquitoes, or protect humans or animals from any mosquito-borne disease.

*Docket No. 9303, In the Matter of Lentek International, Inc., Jospeh Durek and Lou Lentine. FTC File No. 012-3117.

Bug Zappers

Buz zappers use ultraviolet light to lure mosquitoes into a trap that will electrocute them. These devices attract many types of insects such as moths and beetles. Studies have shown that these devices do not reduce the number of biting mosquitoes, and they kill other types of insects more often than they kill mosquitoes.

Bats and Purple Martins

Bats and purple martins eat mosquitoes; however, just like most organisims, they have a varied diet. Species that rely on one source of food can quickly be eliminated if there is a shortage or complete halt to their food supply.

Mosquitoes make up only a very small portion of the diet of bats and birds. There is no evidence that any bird or bat can effectively control mosquitoes when they are at or near peak abundance.

It is not prudent, especially during times of high risk of exposure to any mosquito-borne disease, to rely on birds or bats to control mosquitoes. There is no doubt that they will consume them, but not in sufficient numbers to demonstrate an appreciable reduction of biting mosquitoes.

Additional Considerations

"Natural" is a word that recently has been used to promote "safe" products. Unfortunately, the wording can be misleading for the uninformed individual. Products made of, or derived from, something "natural" does not necessarily mean it is safe or non-toxic. Remember that salt is "natural", but not necessarily "safe."

Additionally, "safe" or "natural" products may not be effective. There are trade-offs that buyer must consider.

Advertisements for mosquito control devices that claim to "reduce West Nile" or any other mosquito-borne disease are inappropriate and misleading. There are no devices that have been shown to have an impact on reducing mosquito-borne disease transmission.

Reducing breeding sites around the house is one component of good home mosquito control. For more information on mosquito control around the home, see "Mosquitoes In and Around the Home," Factsheet ENY-2004.

Repellents containing DEET are the most effective for personal protection from mosquito bites. To learn more about how to protect yourself from mosquito bites, see "Mosquito Repellents," Factsheet ENY-671.

References and Additional Reading

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