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American Mosquito Control Association Position Statement

The Mosquito Bucket Challenge Is Not a Replacement for Integrated Mosquito Management Programs

Summary: The AMCA recognizes the strong public interest in the Mosquito Bucket Challenge and acknowledges that its use of Bti in water-filled containers may appear to offer a simple way to reduce mosquitoes. However, mosquito control is far more complex as many mosquito species will not be affected by this method. Related oviposition trap technologies can contribute to suppression only when deployed at sufficient scale, properly maintained, and guided by independent surveillance. A few household buckets should therefore be considered limited in scope and should not be promoted as effective comprehensive mosquito control or as a replacement for professionally managed Mosquito Management programs.

Effective mosquito control requires science-based strategies that consider mosquito biology, local species composition, disease risk, and environmental conditions. Recently, a do-it-yourself (DIY) approach commonly referred to as the "Mosquito Bucket Challenge" (also known as the "Mosquito Bucket of Doom") has gained widespread attention through social media as a simple method for controlling mosquitoes around the home. Because this approach has raised questions and a growing interest among homeowners, public officials, and mosquito control professionals, the American Mosquito Control Association (AMCA) offers the following guidance on its use and appropriate role within Integrated Mosquito Management (IMM) programs.

The Mosquito Bucket Challenge, although it may appear to be based on sound scientific knowledge of mosquito breeding behavior, is based on a limited understanding of mosquito biology. Indeed, the basic principle of attracting mosquitoes to an egg-laying site and using a biorational larvicide to control larval mosquitoes make sense. Similar ideas and trap types have been used in mosquito control for years. In fact, these concepts have been evaluated in the scientific literature and used throughout programs in the U.S. and abroad. In the mosquito control community, we refer to these as lethal oviposition traps, autocidal gravid ovitraps (AGO traps), and other autodissemination technologies. However, unlike bucket traps that only kill mosquito larvae, it is important to note that the similar traps used in mosquito control programs also kill adult female mosquitoes. Under appropriate conditions, these approaches can reduce populations of certain container-breeding mosquito species and may contribute to mosquito suppression when implemented at sufficient scale and properly maintained.

However, the AMCA does not support claims that a few backyard mosquito buckets provide effective comprehensive mosquito control or serve as a replacement for Integrated Mosquito Management programs.

One of the most important limitations of these DIY Mosquito Buckets is that mosquito species differ greatly in their egg-laying behavior. The Mosquito Bucket Challenge primarily targets container-breeding mosquitoes that naturally lay their eggs in small artificial containers. However, with nearly 200 mosquito species throughout North America many more lay their eggs in noncontainer habitats such as salt marshes, floodplains, wetlands, woodland pools, irrigated pastures, or roadside ditches. These species are unlikely to be attracted to backyard buckets. Consequently, the effectiveness of a mosquito bucket varies considerably depending on the mosquito species present in a particular community.

Even among container-inhabiting mosquitoes, effectiveness may be limited by mosquito behavior. Species such as *Aedes aegypti* and *Aedes albopictus* commonly practice "skip oviposition" and distribute eggs among multiple water-holding containers rather than depositing all their eggs in a single location. As a result, a single bucket captures only a portion of the eggs produced by an individual mosquito, while the female mosquito is able to seek out other sites that remain untreated.

Successful use of mosquito buckets also depends on consistent maintenance. Water levels, organic attractants, and Bti treatments must be maintained according to label directions. Poorly maintained buckets or untreated containers can become prolific mosquito production sites rather than control tools. Homeowners should also recognize that the bucket is designed to attract gravid female mosquitoes. Unless the device incorporates a means to kill adult mosquitoes, the female remains alive after laying eggs and is already in your backyard when she seeks a new blood meal.

Published studies demonstrating meaningful mosquito suppression using related trap technologies generally involved coordinated neighborhood-scale deployments, large numbers of traps, routine servicing, and ongoing surveillance conducted by trained personnel. These conditions differ substantially from placing one or several buckets in an individual backyard. IMM recognizes that no single method effectively controls every mosquito species or every stage of life. Successful mosquito management combines surveillance, public education, source reduction, biological control, and targeted larval and adult mosquito control with methods selected according to local mosquito species, abundance, disease risk, and environmental conditions. Professional mosquito control programs continually monitor mosquito abundance, identify species of concern, evaluate disease activity, and select the most appropriate control tools to protect public health and well-being while minimizing environmental impacts.

The AMCA supports evidence-based mosquito management practices and encourages homeowners to eliminate unnecessary standing water, maintain screens, use EPA-registered repellents, and consult their local mosquito control program regarding the mosquito species and control recommendations appropriate for their community. The Mosquito Bucket Challenge can be a limited tool for managing certain container-inhabiting mosquitoes. However, the current scientific evidence does not support claims that it provides broad community-wide mosquito control or replaces professionally managed IMM programs. Effective mosquito control is achieved not by relying on any single technique, but through the thoughtful integration of multiple complementary strategies guided by surveillance, scientific evidence, and local expertise.