Larval Mosquito Control for Homeowners – 2022

Mosquitoes are common nuisance and public health pests of man and animals around the world. The most efficient and cost-effective manner to suppress mosquito populations is to use an Integrated Pest Management Approach. This approach involves learning how and where mosquitoes develop and trying to eliminate the standing water where larval mosquitoes occur. If pest populations persist, it becomes necessary to identify exactly what species is causing the problem, and where the pest population is developing. Larval habitats that cannot be eliminated through source reduction techniques can be treated with an Environmental Protection Agency (EPA) approved larvicide. If the larval habitats cannot be identified, or are distant, or expansive, adulticide applications may be required.

All mosquitoes require standing water for their larval and pupal development. Mosquitoes eggs are deposited on soils in areas that flood, above the water line in natural or artificial containers, or on the surface of standing water. Upon hatching, the larval stage develops through four instars. Under ideal conditions of warm temperatures and abundant food (small plants, animals and particles of organic matter), the larval stage may only require five to six days, but it usually takes longer. After completing the larval stage, pupation occurs. The pupa is a non-feeding stage and is a period of transition. It often requires two to three days before the adult mosquito emerges onto the water's surface. The male and female mosquito both feed on nectar and other plant fluids to provide energy for flight, but only the female mosquito seeks a blood meal to acquire the nutrients needed to stimulate egg production.

The most efficient way to break this life cycle is to target the larval stage when they are confined to their standing water habitats. If the larval habitat cannot be eliminated through source reduction techniques (tip and toss, improved drainage, community cleanup…), there are a wide variety of safe and effective larvicides available. The optimum formulation and active ingredient are typically chosen based on the type of larval habitat being targeted and the resources available. Larvicides approved by the EPA include the active ingredients: *Bacillus thuringiensis* subsp. *israelensis* (Bti), *Bacillus sphaericus*, Spinosad, methoprene, pyriproxyfen and mineral oil. There are combination products available for specialty situations. Mineral oil-based products also serve as pupacides. These active ingredients are typically available as either liquid, granular or pelletized formulations. Briquettes, dunks or water dispersible pouches are available for catch basins and other confined areas (i.e. rain barrels, cisterns or pools). The mosquito fish, *Gambusia affinis,* is another effective biological control option for some locations.

When a larval habitat has been located, the most effective and practical manner of larvicide application should be identified. Areas of open water with limited vegetation can be effectively treated with a variety of formulations. Often a liquid formulation applied with a back pack or pump-up sprayer can be used in a cost-efficient manner. Larger areas may require a motorized pumping system. For areas of standing water with extensive vegetation, a granular or pelletized formulation will often provide the best results. These formulations will penetrate through the vegetation to the aquatic habitats below and can be applied with a variety of cyclone spreaders or backpack blowers. All of these products are applied in a weight or volume of product/unit of area (i.e. lbs/acre or fluid oz./acre). Applying any of the formulations at the proper rate is critical to the effectiveness of the application. No matter what product or formulation is chosen, it is essential to carefully read, and follow, the pesticide label as **The Label Is The Law**! A complete list of approved larvicides can be found in UGA Extension Special Bulletins 28 and 48, the *Georgia Pest Management Handbook*. For additional information please contact Elmer W. Gray at ewgray@uga.edu.