How to Safely Reduce the Mosquito Population & Prevent Mosquito Bites

Positive Reviewers of this message: The Xerces Society for Invertebrate Conservation & Toxic Free NC

Definitions

1) Mosquitoes have 4 developmental stages: egg, larva, pupa, and adult. Only adult mosquitoes can fly. Only adult females bite.

2) Insecticides are one form of pesticide. Two types of insecticides are larvicides (which kill larva), and adulticides (which kill adult insects).

3) Mosquito larva can only grow in standing water. Bacillus thuringiensis israelensis (Bti) larvicide added to standing water will kill mosquito larva, blackfly larva, and gungus gnat larva when eaten. According to the CDC, Bti will not harm people, pets and other animals, aquatic life, or other insects including honey bees. Bti larvicide comes in tablets, briquettes, pellets, granules, or liquid.

4) Pyrethroids are man-made broad-spectrum adulticides that are commonly sprayed to kill mosquitoes. Unfortunately, broad-spectrum means they kill most insect species on contact. There are many adulticides in the pyrethroid family. Their names usually end in "thrin" such as: bifenthrin, permethrin, deltramethrin, & cyfluthrin.

Introduction to Reducing the Mosquito Population

The safest method to reduce the mosquito population is to prevent mosquito larva from developing into adult mosquitoes. Larva can't develop without standing water. Therefore, eliminating standing water is our first line of defense. Where standing water can't be eliminated (i.e. backyard ponds), our second line of defense is to add Bti larvicide to it.

When there is a disease vector present, in consideration of public health concerns, some pesticide use may be warranted, but not as the first or second line of defense. Broad spectrum adulticides are problematic because of the harm they cause to our environment. The World Health Organization recommends adulticiding only in case of a disease outbreak.

Environmental Harm Caused by Mosquito Spraying

It's important to understand the harm caused when adulticides are sprayed to kill mosquitoes in our backyards, understand that there are ways to greatly reduce the mosquito population without adulticides, and understand the ways to avoid mosquito bites. The NC State Extension stated a typical backyard contains 1,000 or more different insect species and the vast majority of insects are harmless or even beneficial; less than 1% are considered pests. Unfortunately, broad spectrum adulticides kill a wide variety of these non-targeted insect species on contact. Products that are organic or natural can be just as lethal. A few examples of non-targeted insects that can be killed from mosquito spraying include numerous species of bees, butterflies, and moths. Also included are dragonflies which can eat more than 100 mosquitoes a day. Insects serve important roles in a healthy environment and are vital to our complex food web in which we all depend. Bees and other insects pollinate a high percentage of our food crops. They are also necessary to maintain flowering plants. Without insects our ecosystem would collapse. Our world has seen a sharp decline. Instead of spraying poisons to kill adult mosquitoes and unintentionally killing many other insect species, below are safe ways to control mosquitoes.

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How to Safely Significantly Reduce the Mosquito Population

Mosquitoes need stagnant / standing water approximately 5 days for mosquito larva to grow and mature into adult mosquitoes. The most important thing we can do to greatly reduce the mosquito population is to eliminate stagnant water. Mosquito larva can grow in as little as a bottle cap of water. Look for standing water now, and after it rains. Eliminate it, or dump and refresh the container at least every 5 days with clean water such as in bird baths. Use Bti larvicides in water that can't be dumped, such as in back yard ponds. The Centers for Disease Control and Prevention stress the value of prevention and early intervention. After all, it is easier and more effective to eliminate places where mosquitoes can breed, and where we can't, kill the mosquitoes in the larvae stage before they can fly or vector a disease.

1) Places to remove or prevent standing water:

- Every year, unclog rain gutters clogged from fallen leaves and other debris.
- Fix leaky hoses and unclog drains.
- If left outdoors, cover trash and recycling bins.
- Assure outdoor tarps are placed so they don't collect water.
- If possible, take items inside to prevent them from filling with water such as buckets, watering cans, toys, old tires, and wheelbarrows.
- Turn items over that need to stay outside or consider drilling drain holes in them.
- Fill potholes and other non-draining areas.
- Fill holes or depressions in trees with sand, or drain the water out after it rains.
- Replace or screen corrugated drain pipes because the notches hold standing water.

2) For pet bowls, it's safest to remove and replace the water at least daily.

3) For bird baths it's best to remove and replace the standing water with clean water at least every 5 days. It's also healthier for the birds.

4) For other items that you want to hold standing water such as pot saucers, remove and replace the water with fresh water at least every 5 days.

5) Where standing water can't be removed and replaced with fresh water (i.e. backyard ponds), add Bti larvicide to the water.

6) Screen or cover rain barrels, or add Bti larvicide to the water.

7) Trim overgrown vegetation to reduce mosquito habitat.

8) Encourage natural predators like purple Martins, bats, birds, frogs, & dragonflies.

9) Use mosquito traps.

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Ways to Prevent Mosquito Bites

 Prevent mosquito bites by using mosquito repellent: Follow the application instructions. Note that the instructions may vary by age. Do not spray repellent on skin under clothing. If you apply sunscreen, apply sunscreen before insect repellent. Ages 3 & up: Mosquito repellent with oil of lemon eucalyptus is less toxic, resists clothing damage, but needs to be reapplied more often than some other products.

2) Consider wearing protective clothing. Mosquitoes are attracted to dark colors. Wear lightweight light-colored, loose fitting long sleeved shirts and pants, shoes and socks, and possibly head protection and gloves to keep mosquitoes away from your skin. Mosquitoes can't bite if they can't reach.

3) Use a box fan on the patio. Mosquitoes can only fly about 1 to 1.5 miles per hour so they are blown away by a stronger wind.

4) Using Citronella candles may help reduce bites when there is no wind.

5) For inside protection, repair screened windows and doors so they fit tightly.

Integrated Mosquito Management Program

Responding to both unwanted and harmful mosquitoes is best handled when a community proactively implements an integrated mosquito management program (IMM). Many communities already have such plans in place. An ecologically sound IMM program includes educating the community about ways to prevent mosquito bites, as well as ways we all can help reduce the mosquito population. The most important way is for landowners and community leaders to remove breeding grounds on private and public property by removing standing water wherever possible. This is our first line of defense. The IMM program also includes monitoring for mosquitoes that vector disease with mosquito traps. If there is a threat of disease, it can include treating standing water with larvicides where large numbers of mosquitoes breed. This would be our second line of defense. These programs benefit our ecosystem services such as the pollination of our food crops, because they minimize the release of chemical contaminates. The use of insecticides is not ecologically sound and should only be considered as a last resort due to its unintended harmful effects including killing beneficial insects. Some cities have already contained mosquito-borne illnesses without insecticides. While all IMM have these same basic components, different communities have different needs. Contact your local city or county vector control program or health department for information specific to your area.

A flyer on the "Environmental Impacts of Spraying Your Yard to Kill Mosquitoes" is attached. Feel free to share the flyer and/or this information with your friends and neighbors. We will make a greater impact with more participation.