

How to Make Your Yard Less Conducive to Container Mosquitoes

Precautions that May Reduce the Spread of La Crosse Encephalitis and Zika Virus

<https://extension.tennessee.edu/WebPacket/Pages/NYCU-2016-03-ZikaPrecautions.aspx>



Adult *Aedes albopictus*, the Asian tiger mosquito, a potential vector of Zika virus, is common in Tennessee. It is easily identified by a single white stripe on the thorax and striped legs. Photo by Cassandra Urquhart, UT Entomology and Plant Pathology, courtesy UTIA

UT Extension *News You Can Use* released 3/28/2016

Karen Vail, kvail@utk.edu, and Rebecca Trout Fryxell, rfryxell@utk.edu

Warm weather brings us blooming trees and shrubs, beautiful landscapes and, well, insects. This year, the insect that is on the minds of homeowners and health professionals is the mosquito — particularly mosquito species that can carry Zika virus, which has been making news worldwide as a recently identified pathogen, as well as La Crosse encephalitis, a well-established threat to young children.

Experts have identified the main mosquito vectors of Zika virus as *Aedes aegypti* (the yellow fever mosquito) and *Aedes albopictus* (the Asian tiger mosquito). While *Ae. aegypti* has not been identified in more than 15 years in Tennessee, the Asian tiger mosquito (*Ae. albopictus*) is the most common mosquito encountered around homes. And it is known to carry both the Zika and La Crosse viruses, the latter of which is known to have caused the death of Tennessee children.

Karen Vail, professor of entomology with the University of Tennessee Extension, says both the yellow fever mosquito and the Asian tiger mosquito are referred to as “container

mosquitoes” because they lay their eggs on the edge of a “container” like a planter, bucket or old tire. “Anything that can collect rain can serve as a container,” she said. “As water from the container evaporates the eggs dry out, when the container fills with water again the eggs become submerged allowing for mosquitoes to hatch.” Vail adds that container mosquitoes do not fly very far, so searching your property for potential “containers” is the best way to find and eliminate the sources of standing water and therefore the mosquitoes.

Vail says the larvae feed on organic matter in the water and undergo four molts before pupating and becoming an adult mosquito. This development typically takes just one week, so she recommends that property owners be sure to inspect their property weekly and to dump standing water. “Pick a day, such as Saturday, and add this task to your “to do” list,” she says.

Here’s a quick checklist of some potential mosquito-reducing chores and “containers” to inspect:

- Remove containers or similar objects such as cups, soda cans, tires, buckets, plastic sheeting and others from areas surrounding the home. If tires can’t be removed, drill holes to allow water to drain. Also, watch how tarps lie as they can accidentally hold water.
- Do not allow water to remain in flower pot bases, pet dishes, children’s wading pools or bird baths for longer than a week.
- Clean gutters, downspouts, roofs, etc. to remove leaves and other debris that may hold standing water. Inspect these items regularly. If gutters bend or get damaged it is important to fix them as the dent can hold enough water for mosquito development.
- Tree holes or stumps often contain water. Drain them or fill them with sand.
- Water the landscape so standing water cannot accumulate for more than a few days.
- Inspect animal water troughs and surrounding ground for larval mosquitoes and change water if necessary.
- Stock a small garden pool or ornamental pond with mosquito-eating fish such as native top-feeding minnows or goldfish. Ensure pond water is agitated.
- Make sure covers on pools, grills and boats do not retain water.
- Cover rain-collecting barrels with a 16-mesh screen.
- Corrugated drain pipes should be angled to prevent water from accumulating in dips.

Another way to reduce mosquitoes in or around homes is to reduce or thin dense vegetation, which provides resting sites for the adults. When mosquitoes become active later in the spring, appropriately labeled products containing permethrin, other pyrethroids,

malathion, and others can be applied to shrubbery and other resting sites listed on the label. See this handy guide for managing pests, including mosquitoes, around the home.

Mosquitoes survive the winter as eggs and larvae will not hatch until exposed to longer days later in the spring. According to Rebecca Trout Fryxell, assistant professor of entomology in the UT Department of Entomology and Plant Pathology, “We typically see our first Asian tiger mosquitoes in May and June, so we have time to prepare. We have already seen other species this season, but these species do not transmit any pathogens to humans.”

Additional information on *Aedes* mosquito control can be found online at the Center for Disease Control and Prevention (CDC) website: cdc.gov

Later in the spring, if standing water cannot be removed and mosquito larvae (wigglers) or pupae (tumblers) are detected in containers, dunk or granular products containing *Bacillus thuringiensis israeliensis* (Bti) or methoprene can be used to treat the water and kill the immature mosquitoes. Follow pesticide label directions carefully as adding ‘more’ will only cost more money.

To apply pesticides to public lands and waters, the applicator must have a valid category 8 (Public Health Pest Control) certification and work under the supervision of a person licensed in PHMC (Public Health Mosquito Control). Pesticide certification and licensing is enforced by the Tennessee Department of Agriculture.

Both Vail and Trout Fryxell say that you can reduce the chance of being bitten by mosquitoes by wearing loose-fitting, light-colored long pants and long sleeved shirts and by avoiding areas where dense mosquito populations occur. “Container mosquitoes bite all day, so apply insect repellent when outdoors and mosquitoes are active,” says Vail. “Recent research released on *Ae. albopictus* repellents indicates that products containing DEET, Cutter Lemon Eucalyptus Insect Repellent (oil of lemon eucalyptus and p-methane-3-8-diol) and EcoSmart Organic Insect Repellent (geraniol, rosemary oil, cinnamon oil and lemongrass oil) reduced mosquito attraction for hours. She recommends reviewing the CDC website (search ‘insect repellent’) <http://www.cdc.gov/westnile/faq/repellent.html>, for precautions on using repellents.

Although mosquito populations in Tennessee, particularly counties in East Tennessee and along the Cumberland Plateau, are known to carry the La Crosse encephalitis virus, Vail says the risk for Zika virus transmission in Tennessee is slight because the primary vector — the yellow fever mosquito — is not currently known in the state. There is a slight risk for infection, however, due to a mosquito feeding on an asymptomatic person. “We have also learned that aside from mosquito bites, the Zika virus may also be transmitted through sexual contact (up to 60 days post infection), from mother to child, and through blood transfusions,” she said.

To prevent transmitting Zika virus, the CDC recommends that infected males wait six months before having unprotected sex. Both microcephaly (an abnormally small infant head and brain) and Guillain-Barre syndrome (human immune response attacks the nerves causing weakness and tingling) have been correlated with Zika virus infection, but the mechanism of transmission has not been confirmed. As of March 25th, no cases of locally acquired Zika virus have been found in the continental U.S.

Entomologists and health officials across the country are monitoring areas of the country where *Ae. aegypti* is established, including southern Texas, southern Florida, Puerto Rico, the U.S. Virgin Islands and Guam) as well as areas where the vector has been identified, including parts of California and Hawaii." Zika will probably establish in these other areas before it does in Tennessee," Vail says. "Unfortunately, most of those areas are also experiencing other *Aedes*-borne viruses such as dengue and Chikungunya."

According to the CDC, the greatest risk of acquiring Zika virus is to travelers in areas with active Zika virus transmission occurring. Vail reminds those planning to travel in areas with active Zika virus that precautions should be taken to avoid all mosquito bites because mosquitoes in those areas can transmit more than just Zika. They also transmit malaria, yellow fever, dengue fever and Chikungunya.

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Contacts:

Karen Vail, Department of Entomology and Plant Pathology, kvail@utk.edu

Rebecca Trout Fryxell, Department of Entomology and Plant Pathology, rfryxell@utk.edu

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Additional Resources:

The Centers for Disease Control and Prevention

www.cdc.gov/zika

www.cdc.gov/LAC

UT Extension

<https://extension.tennessee.edu/WebPacket/Documents/ZikaVirusDisease.pdf>