

Trap Tricks Pregnant Mosquitoes With Enticingly Lethal Maternity Ward

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Tulane University researchers are using mosquitoes' motherly instincts against them to develop a novel trap to fight the spread of dengue fever. Researchers are deploying small devices with just the right mix of chemicals to convince the disease-carrying mosquitoes they've found the perfect place to lay their eggs.

But once they fly into this lethal maternity ward, there's no getting out alive.

Tulane is about to begin a pilot study to see if the small gallon-sized traps are an effective, low-cost strategy to prevent transmission of dengue fever, one of the most widespread and deadly mosquito-borne viruses in the world. Using a \$4.6 million grant from The Bill & Melinda Gates Foundation, Tulane plans to eventually deploy up to 10,000 traps in Iquitos, Peru, an area in the Amazon rainforest where dengue fever is a persistent problem.

"After malaria, dengue is the most important mosquito transmitted disease in the world and is a major cause of disease and death in the tropics," says Dawn Wesson, associate professor of tropical medicine at Tulane University School of Public Health and Tropical Medicine. "Right now there has really been nothing that can be safely used on a wide, multinational scale to reduce dengue transmission. If this trap works, we think it can change a lot of people's lives."

There is no vaccine or cure for dengue fever. The only effective way to stop transmission is to reduce the mosquito population, but mosquito control is virtually nonexistent in most areas where the virus is common. It's too costly and environmentally harmful to deploy widespread pesticides and many mosquitoes have developed a resistance to insecticides, Wesson says.

The traps are unique in several ways. Most others target host-seeking mosquitoes

looking for a blood meal. Tulane's traps target those that have already tasted blood, making them the most dangerous because they may have bitten someone infected with the dengue virus. Female mosquitoes feed before they breed.

"If we can lure that mosquito in and kill her before she has that next blood meal, then we can stop that transmission. If you do that enough times, you can actually stop the transmission of dengue or any other mosquito-borne pathogen," Wesson says. "It's a novel approach to not only mosquito control, but also disease control."

The trap looks like a small, 12-inch-high black trashcan with holes at the top and a bright red lid. It contains water and a specially developed mixture of attractants that mimic the ideal mix of bacteria and decaying leaves that dengue fever mosquitoes (*Aedes aegypti*) look for in spawning containers. The water is laced with pesticide to kill the eggs, and the container is lined with insecticidal fabric designed to kill the adult mosquito.

Wesson's team will place two to three traps in residences in an area of Iquitos. Homeowners will maintain the traps, filling them up weekly and swapping out components every two months. The goal is to place them in bedrooms, kitchens and outdoor areas near homes for a year. Teams will compare mosquito sampling data and dengue fever cases between the area with traps and a control area where no traps are present.

If the traps prove successful, plans call for further testing in the Caribbean and Thailand. Tulane is leading the project in conjunction with researchers from North Carolina State University, the University of California, Davis, and officials from the U.S. Navy.

Click [here](#) to watch a video of Dawn Wesson explaining how the mosquito trap works.