



Sterile Insect Technique Q & A

The Pasco County Mosquito Control District (PCMCD) is preparing to launch a proof-of-concept trial using sterilized male *Aedes aegypti* mosquitoes as part of our integrated mosquito management program. This trial will evaluate whether this innovative, environmentally friendly technique can help reduce populations of *Aedes aegypti* in our local area. *Aedes aegypti* is the primary mosquito species responsible for spreading dengue, Zika, chikungunya, and yellow fever.

What is SIT?

- The Sterile Insect Technique (SIT) is an environmentally friendly, species-specific method used to control or reduce mosquito populations by sterilizing male mosquitoes.
- This technique involves releasing *Aedes aegypti* male mosquitoes grown in an insectary that have been sterilized with the use of low-dose X-rays. These sterile male mosquitoes mate with wild female *Aedes aegypti* mosquitoes, preventing them from producing viable offspring, and their eggs don't hatch.
- SIT is a non-GMO, non-insecticide approach that utilizes X-rays to sterilize the mosquitoes.

Has SIT been used in other areas?

- SIT is a proven method that has been used for decades. In the U.S., it was first applied on Sanibel Island in 1951 to eradicate the Screwworm Fly. More recently, sterile screwworm flies were successfully released to combat an outbreak in the Florida Keys.
- SIT is also used globally in agriculture to manage fruit flies and in Africa to control the Tsetse fly, a vector of sleeping sickness.
- Other Mosquito Control programs in Florida have successfully adopted this technique in recent years. Lee County and Anastasia Mosquito Control Districts have been using SIT to combat *Aedes aegypti* mosquitoes in urban areas and additional programs in Florida are currently evaluating this method as another tool for control, such as Collier County Mosquito Control District.

How does SIT work in mosquito control?

- Female *Aedes aegypti* mosquitoes typically mate only once in their lifetime. When sterile males are released into the wild, they mate with wild females, and those females will not produce offspring. They will lay eggs, however the eggs will not hatch.
- Sterile males, treated with low-dose X-rays, are released to mate with wild females, gradually reducing the mosquito population over successive releases.
- Since only male mosquitoes are released, there will be no increase in mosquito bites in the area, because male mosquitoes do **NOT** bite and therefore cannot spread disease.

Is there any genetic modification involved?

- No. This process involves sterilizing mosquitoes through X-rays, which does not involve any genetic modification. The X-rays used are similar to those employed in medical treatments.



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Which mosquito species will be targeted?

- The *Aedes aegypti* mosquito, a non-native species in Pasco County, will be the target for this project. This mosquito is a carrier of serious diseases like dengue fever, Zika, chikungunya, and yellow fever.
- *Aedes aegypti* mosquitoes are particularly challenging to control due to their cryptic behavior and daytime biting habits, making them less susceptible to traditional control methods. This will be used as an addition to existing control methods deployed by the PCMCD.

Can I discuss SIT with the District to ask questions or voice concerns?

- Yes! The PCMCD wants you to be informed. On PCMCD's website, there is additional information about the project and staff members will be speaking about this treatment method at upcoming meetings, presentations, and media interviews to inform the public about the SIT program and to answer any questions. Additionally, you can call the PCMCD's office at 727-376-4568 to speak with staff.

When and where will PCMCD begin releasing sterile mosquitoes?

- The PCMCD plans to start releasing sterile male mosquitoes in a targeted area of Pasco County with a high population of *Aedes aegypti* mosquitoes and increased risk of mosquito-borne disease transmission. By visiting the PCMCD's website or speaking with staff, more precise location information can be obtained.
- The releases will take place beginning in May, 2025 and be conducted for an 8-week trial period. Increased mosquito monitoring in the area has already begun and will continue throughout the remainder of 2025 for ongoing mosquito population management.

Will any female mosquitoes be released?

- Only male mosquitoes will be released, but there is a small chance that a few females may be unintentionally included. However, these females will be sterile, so they will not contribute to the population.

What are the potential risks of using SIT in Pasco County?

- *Aedes aegypti* mosquitoes are a significant public health threat due to the viruses they can transmit. If successful, SIT will greatly reduce their population and the potential for disease transmission.
- As *Aedes aegypti* mosquitoes are not native to the area and have few natural predators, controlling their population will not negatively impact the local food chain or ecosystem.
- In Pasco County, *Aedes aegypti* mosquitoes make up only 1.6% of all mosquitoes present, according to surveillance data collected in 2024! However, they are a primary disease vector species of concern. The other 46 mosquito species found locally will not be impacted at all by this project.

Where can I learn more about *Aedes aegypti* mosquitoes and local mosquito control efforts?

- For more information, visit the PCMCD's website at www.pascomosquito.org, or call 727-376-4568.
- Additional resources can be found through the Florida Mosquito Control Association (www.yourfmca.org) and the American Mosquito Control Association (www.mosquito.org).