



Eradicating New World Screwworm With Sterile Insect Technique

New World screwworm (NWS), *Cochliomyia hominivorax*, is a devastating pest of livestock. NWS larvae (maggots) can infest livestock, pets, wildlife, occasionally birds, and in rare cases, people. Female NWS flies lay their eggs at the edges of wounds or on other body openings, such as the nose, ears, and genitalia or the navel of newborn animals. The eggs hatch into larvae, burrow into the tissue, and continue to feed and grow, causing painful wounds and secondary infections. NWS infestations can be fatal if untreated.

NWS is found throughout South America (except Chile) and in six Caribbean countries: Aruba, Cuba, Dominican Republic, Haiti, Jamaica, and Trinidad and Tobago. Since 2023, NWS has re-emerged in previously pest-free regions, including all the countries in Central America and Mexico. To prevent further northern spread of NWS into the United States, the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) is partnering with other USDA agencies, the U.S. Department of State, and the Food and Agriculture Organization of the United Nations, to control and eradicate NWS in Central America and Mexico.

Sterile Insect Technique

Sterile insect technique (SIT) is a proven tool for fighting the spread of NWS and protecting American agriculture and natural resources. SIT was developed in the 1950s and used to eradicate NWS from the United States, Mexico, and Central America in the second half of the 20th century.



Sterile NWS pupae | Photo by COPEG



Adult NWS flies | USDA photo, D. Bonilla

SIT uses gamma radiation to irradiate NWS pupae and create sterile male flies. This practice does not impact the male flies' longevity, searching behavior, or mating ability. When produced and released in mass, sterile male flies mate with wild female flies which then lay unfertilized eggs. Since female NWS flies normally mate only once, the NWS population progressively reduces and is, ultimately, eradicated.

The release of sterile flies is safe, environmentally friendly, and offers a sustainable, non-toxic alternative to chemical pesticides. It poses no risk to wildlife, livestock, or people in infested areas.

Sterile Fly Production

APHIS International Services (IS) maintains the only NWS pupae sterilization facility in North America. The facility, located in Pacora, Panama, is jointly managed and funded by USDA and Panama's Ministry of Agriculture Development through the Screwworm Barrier Maintenance Program (also known as COPEG). COPEG produces, sterilizes, and releases NWS sterile flies in infested regions of Central America and Mexico. The COPEG facility can produce over 100 million pupae per week during an outbreak event. USDA is working on increasing the availability of sterile flies to meet the



COPEG facility in Pacora, Panama | Photo by COPEG

current demands of the NWS outbreak by opening additional sterilization facilities.

Sterile NWS flies are mass-produced at the COPEG facility under carefully controlled conditions. To mimic their natural diet, screwworm pupae are fed a combination of spray-dried whole bovine blood or meat protein, dry poultry egg, honey, molasses, and/or dry milk substitute. Along with proper nutrition, many other factors impact the growth, development, survival, and overall quality of sterile screwworm production, including the temperature, relative humidity, rearing substrate, physical handling, and insect densities.

Aerial and Ground Release of Sterile Insects

To control NWS populations, sterile insects are released using specialized aerial and ground methods that ensure even and effective distribution. Aerial releases involve aircraft dispersing sterile flies over targeted areas, while truck releases use specially equipped trucks to disperse flies. In some locations, ground release containers may be placed with sterile fly pupae (that emerge as adult flies). These containers are part of the controlled release process and should not be moved or tampered with. USDA conducts intensive surveillance in infested areas to monitor the effectiveness of the release program.

For More Information

The use of sterile NWS flies has been studied extensively over many decades. When used in combination with other control measures, SIT is an effective tool for eradicating NWS. Scan the QR code to learn more about NWS and the use of SIT to control and eradicate this pest.



Sterile insect ground release chambers | USDA photo, D. Bonilla