

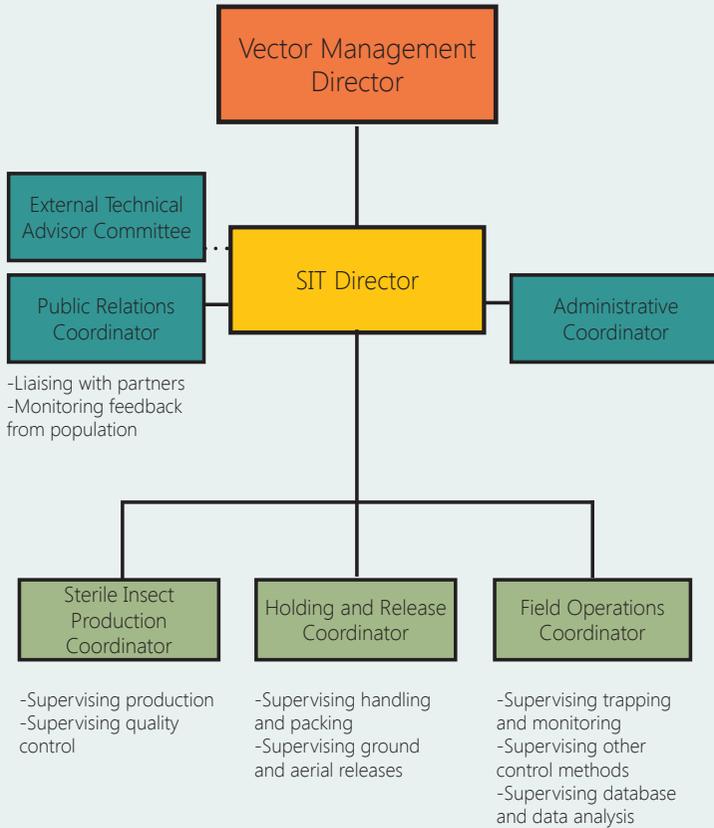
# Sterile Insect Technique



Birth control for mosquitoes

Pathogens spread through mosquito bites. As part of Integrated Vector Management approaches the Sterile Insect Technique aims to suppress mosquito populations and stop diseases from spreading in your community. Applied together with other methods, Sterile Insect Technique is very effective.

## Operational Structure Proposal for an SIT Programme

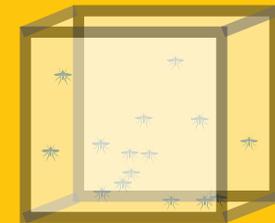


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### 1. MASS-REARING

Mosquitoes are first mass-reared.



The sterile male mosquitoes are released into the wild.

4. RELEASE



They mate with females, who then produce sterile eggs that bear no offspring.

Male mosquitoes are sterilised using ionising radiation.



After sterilisation the mosquitoes are not radioactive, and like wild mosquitoes they only have a life-span of a few weeks.

### 3. STERILISATION

Then mosquitoes are separated into males and females and the males are selected.

2. SORTING



Males do not bite and cannot transmit the disease.



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## The Sterile Insect Technique Principle

Male insects are mass produced, sterilised and released in a target area where they compete with wild males to mate with wild females, who then produce no offspring. Repeated releases of sterile males will diminish the target populations. The Sterile Insect Technique (SIT) is more efficient, cost-effective and safer if the released insects are males, as it is most often the female insect that causes damage by laying eggs in crops, or, in the case of mosquitoes, by taking blood from humans and potentially transmitting diseases.

## Characteristics and Applicability of SIT

- Suppresses mosquito populations
- Is compatible with biological control
- Reduces pesticide use
- Helps preserve biodiversity
- Does not use transgenics (genetic engineering)

## Species-specific

The SIT targets one specific insect population at a time thus preserving biological diversity in a selected area.

## Environmentally friendly

The SIT is a sustainable control method that does not allow the establishment of the released insects, minimizing the effects on non-target organisms.

## Requirements for SIT Application

The SIT involves rearing large numbers of the target insect and exposing them to gamma or X-rays to induce sterility. The sterile insects are then released into the target area. Essential requirements are:

- Availability of economic and viable mass rearing technology;
- Protocols for reproductive sterilization by means of exposing the target insects to either Gamma or "X" rays;
- Release system and technology;
- Population monitoring system.
- Adaptive management related to problem-solving research

## Examples of the Utilization of SIT for the Suppression or Eradication of Major Pests of Economic Importance

The SIT has been successfully developed over the last 50 years and applied on all continents against insects of medical, veterinary, and agricultural importance.

There are many successful achievements in this field to suppress or, in some cases, to eradicate insect pests and disease vectors, including:

- New World screwworm fly in USA, Mexico, Central America, Panama, and Libya.
- Mediterranean fruit fly in USA, Mexico, Chile, some areas of Guatemala, some areas of Argentina and Peru.
- Mexican fruit fly in some areas of Mexico and USA.
- The melon fly in Okinawa, Japan.
- Codling moth in British Columbia, Canada,
- Pink bollworm in southern USA and northern Mexico.
- Tsetse fly in Unguja Island, Zanzibar, Tanzania.

There are several ongoing pilot projects to assess the viability of suppressing or eradicating some species of mosquitoes. The combination of the species of mosquito and the size of the target area and location, will help define if the SIT should be applied for either population suppression or eradication.

## Awareness Strategies

