Integrate Control for *Aedes aegypti* Population Supression

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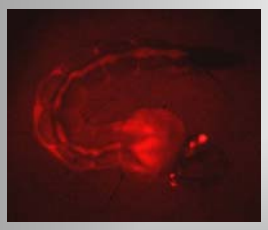
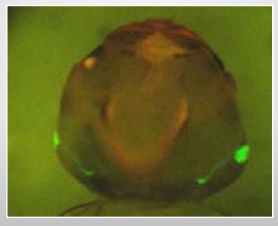
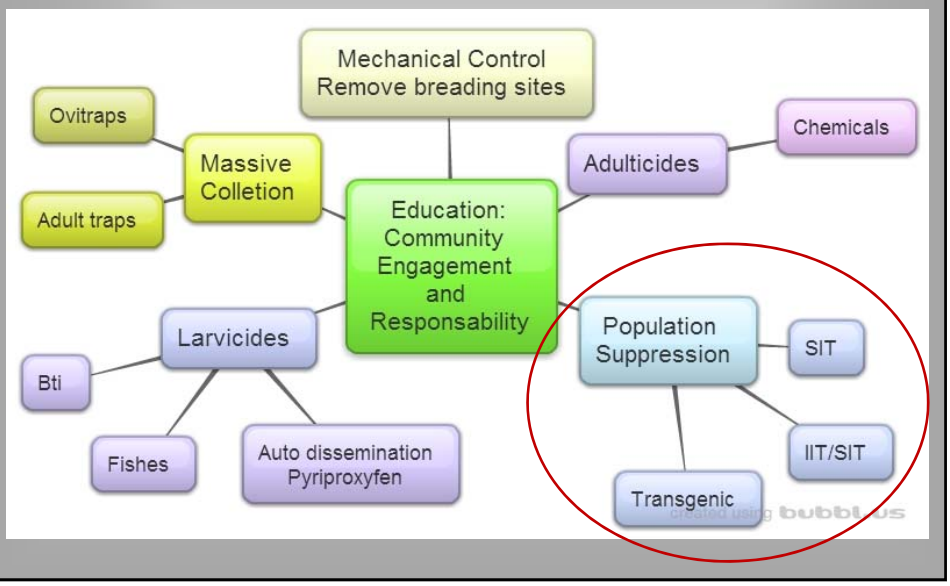
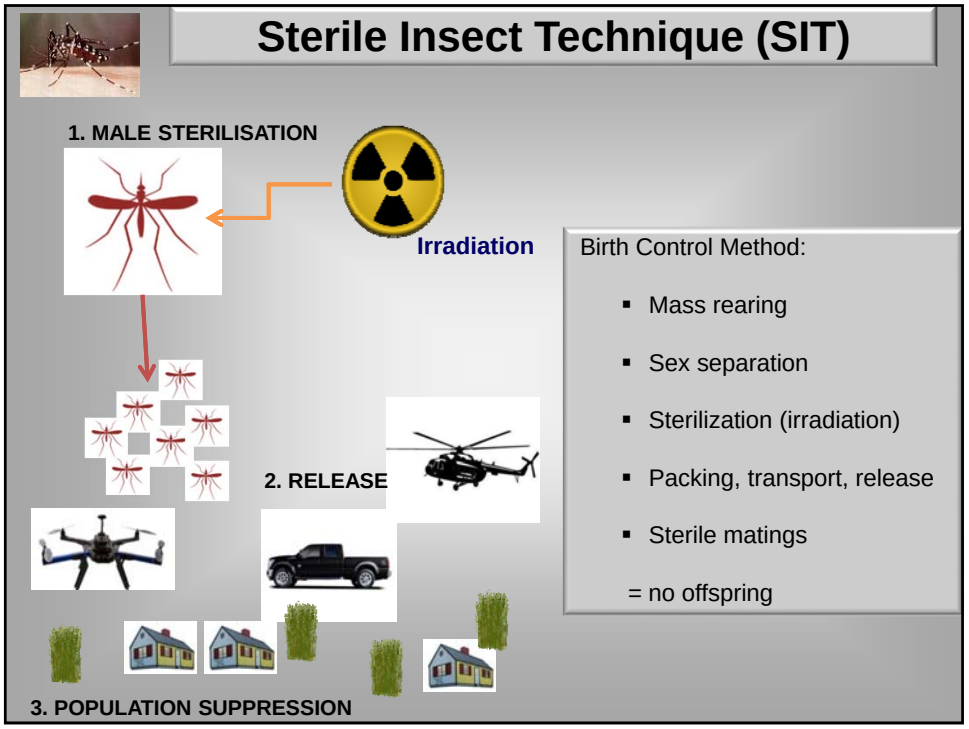
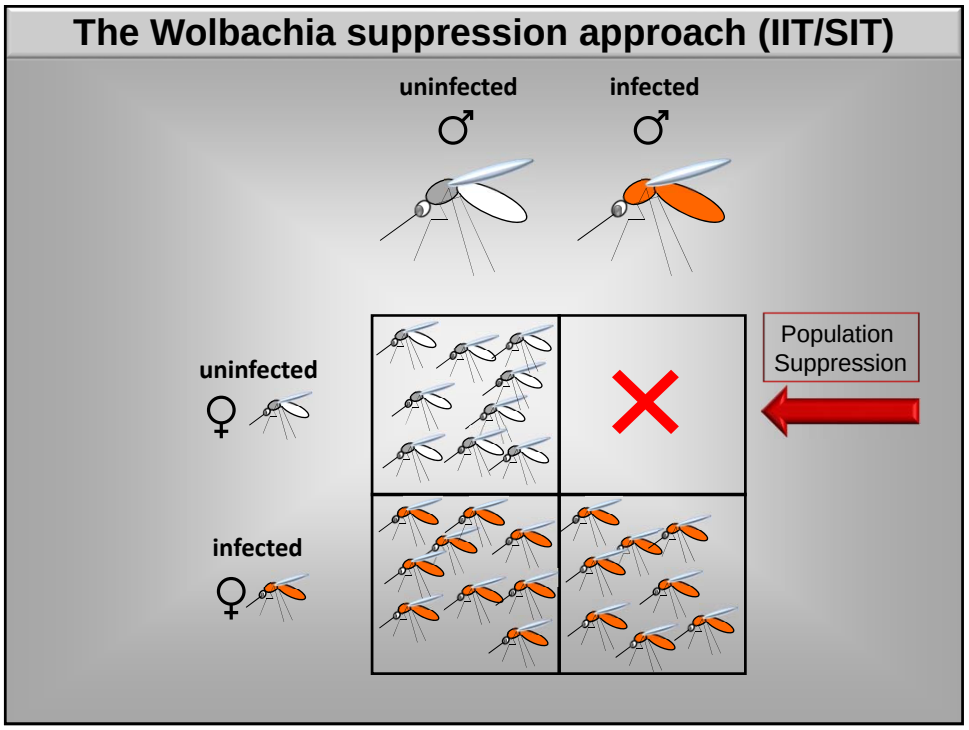




Integrate Control for *Aedes aegypti* Population Supression



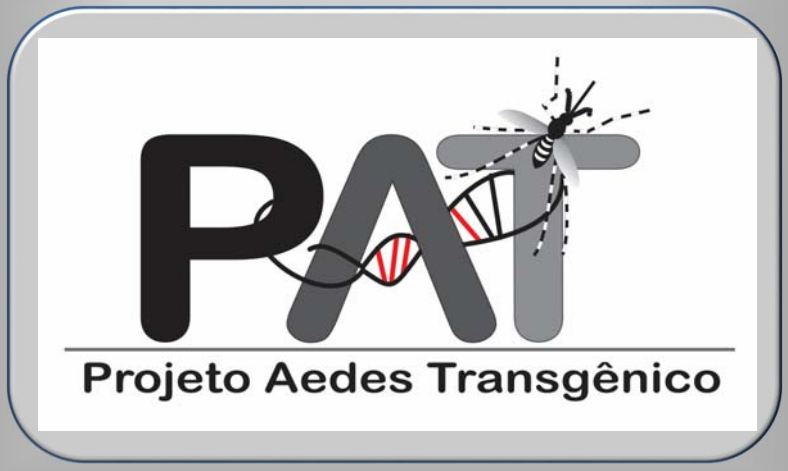

Sterile Insect Technique (SIT)
1. MALE STERILISATION
Irradiation
Birth Control Method:
Mass rearing
Sex separation
Sterilization (irradiation)
Packing, transport, release
Sterile matings
= no offspring
2. RELEASE
3. POPULATION SUPPRESSION


The Wolbachia suppression approach (IIT/SIT)
uninfected
infected
uninfected
infected
Population Suppression

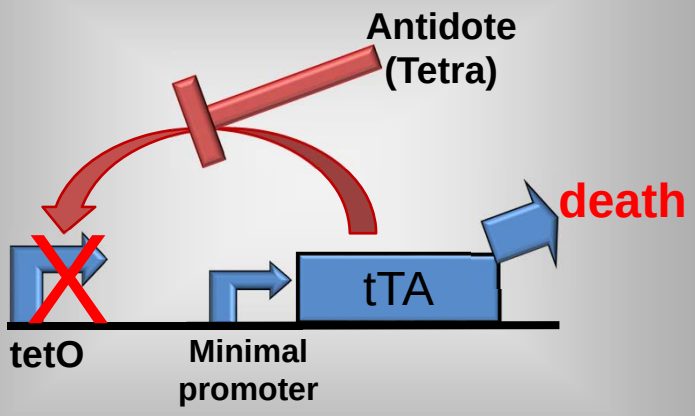
SIT X IIT/SIT

SIT	IIT/SIT
• Male sterilization	• Male incompatibility
• 70 Gy	• Female sterilization
	• 28 – 30 Gy

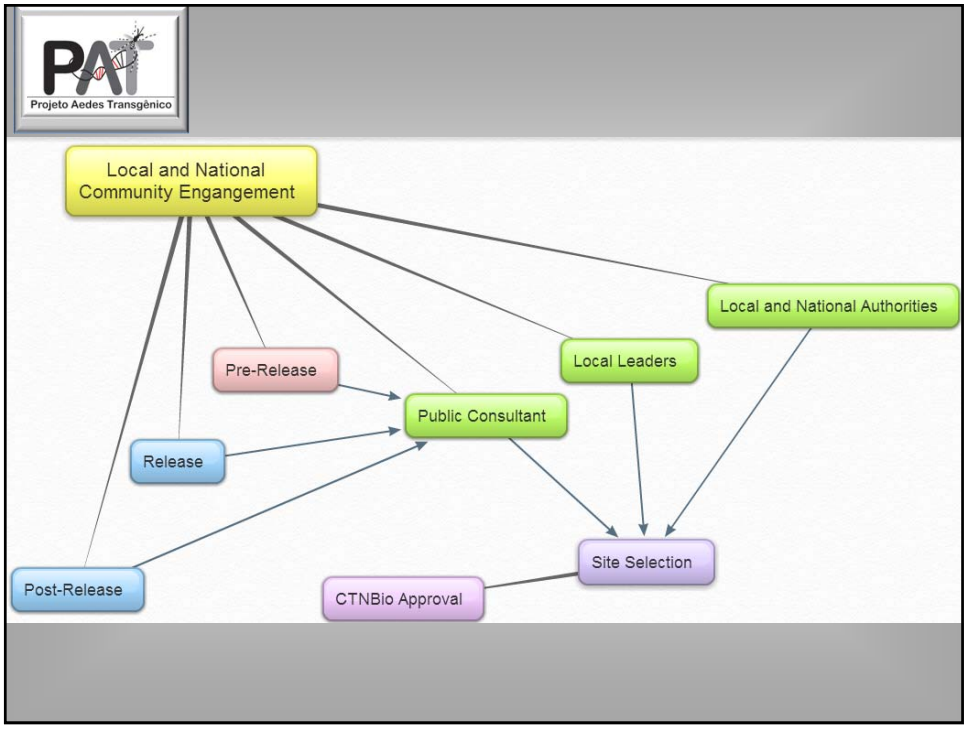
Open Field Release of OX513A *Aedes aegypti* Transgenic line evaluation



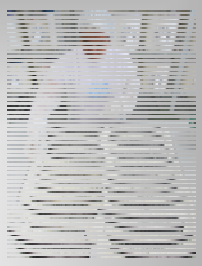
Repressive of **I**nsects carrying a **D**ominant **L**ethal gene (RIDL) – From OXITEC Biotech (UK)



Thomas *et al.* 2000 Science 287: 2474-6



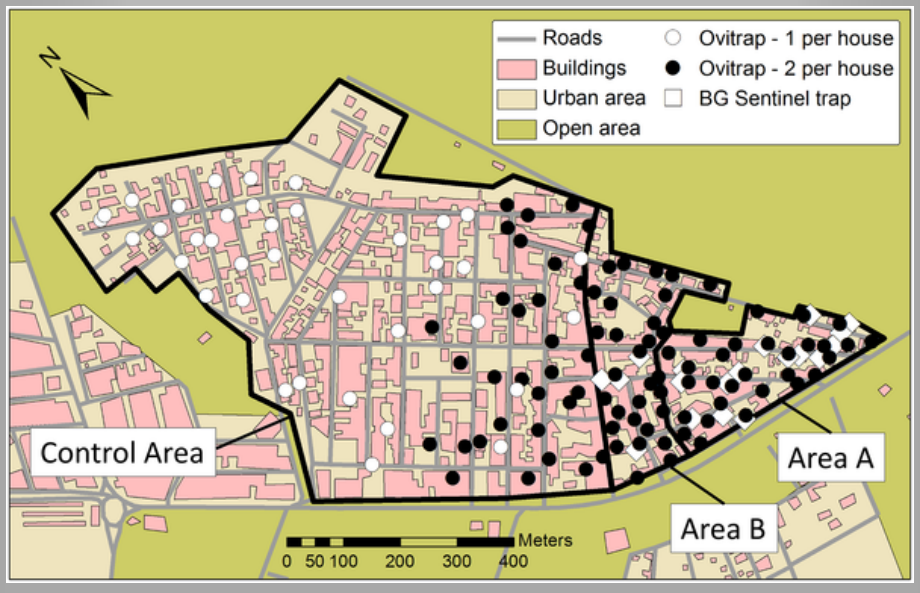
Aedes aegypti Production (UPAT)



COLONY
4 to 6 million eggs/week

Males for releases
1,5 million/week

Itaberaba – Field site



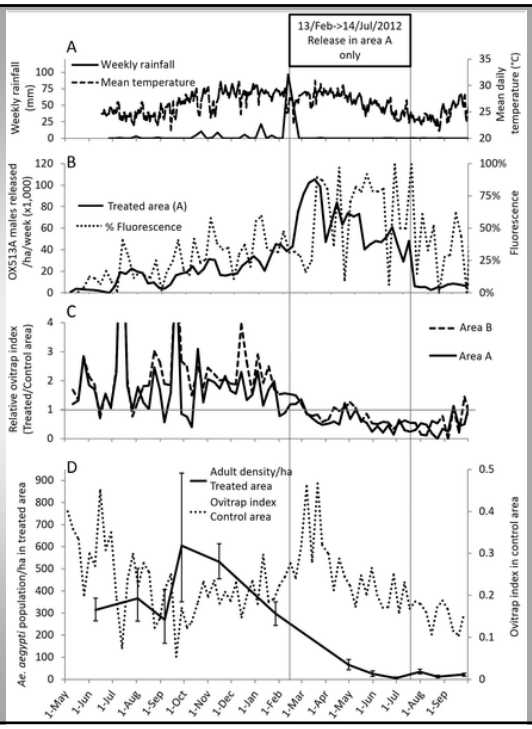
PLOS | NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

Suppression of a Field Population of *Aedes aegypti* in Brazil by Sustained Release of Transgenic Male Mosquitoes

Danilo O. Carvalho[1,2]*, Andrew R. McKemey[3]*, Luiza Garziera[4], Renaud Lacroix[3], Christl A. Donnelly[5], Luke Alphey[3,6], Aldo Malavasi[4], Margareth L. Capurro[1]

PLOS Neglected Tropical Diseases | DOI:10.1371/journal.pntd.0003864 July 2, 2015



PAT
Projeto Aedes Transgênico

Project Phase 2 – Jacobina - Bahia

Pupa transportation (LEMI)

C25

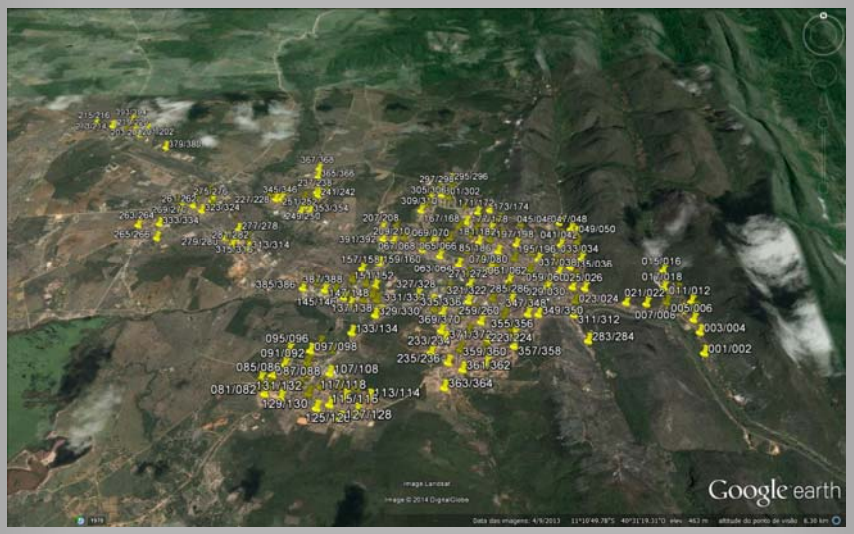
BOD 16ºC ON

180,000 per container

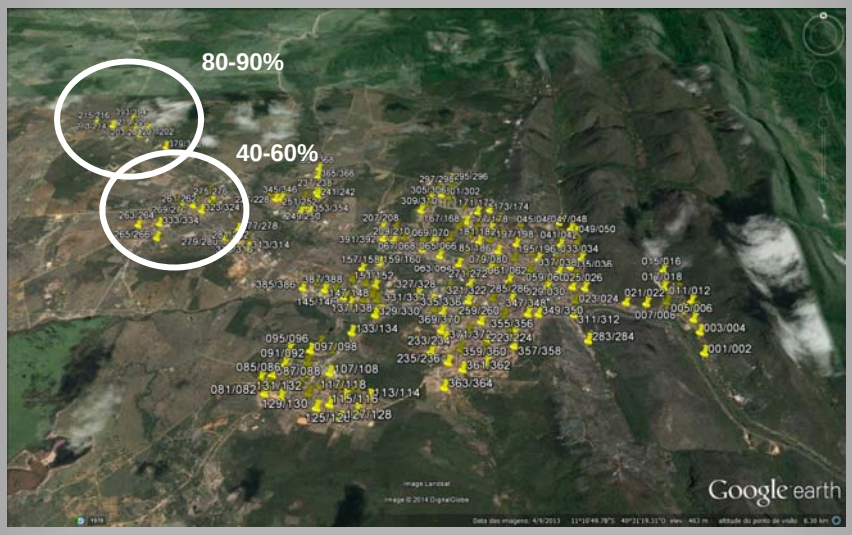
Arriving at LEMI
Emergency , Monitoring and Information Lab

Preparation for release

Project Phase 2 – Jacobina - Bahia



Project Phase 2 – Jacobina - Bahia



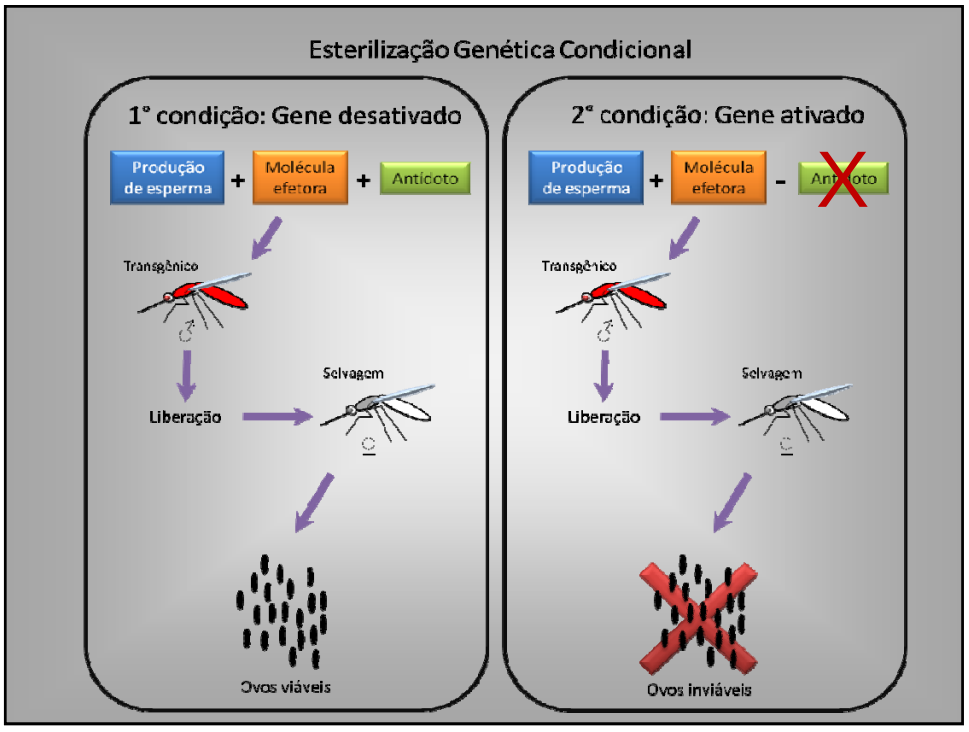
How to implement Transgenic mosquitoes in Integrate Control Programs?

- Egg distribution is easy

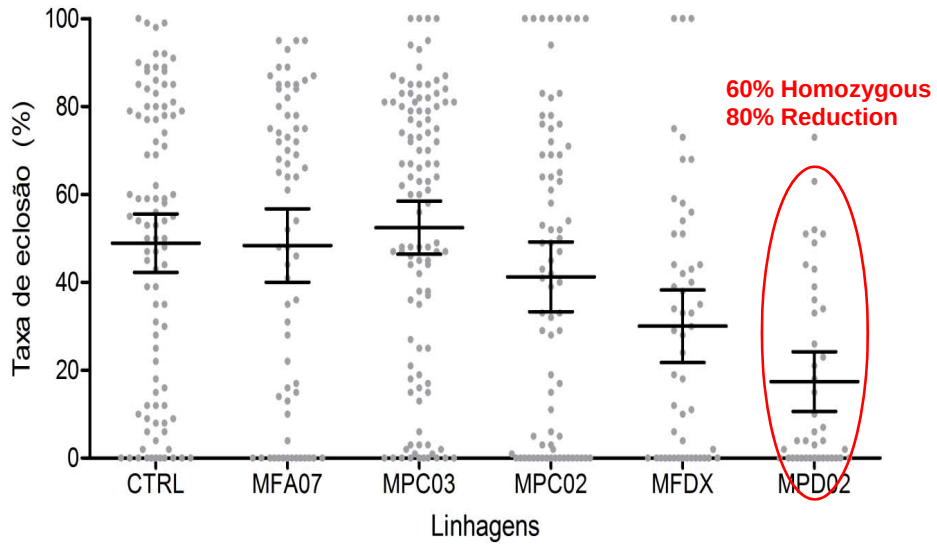
- Hatch centers – no larvae sorter
  - no tetracycline needs
  - after release no offspring

Improving transgenic lines
Aedes aegypti and *Aedes albopictus*

- Producing GSS (Genetic Sexing Strain)
- Producing Sterile male strain (no Larvae)
- Use of tetracycline only in colonies



Sterile Conditional Construct (SCC)



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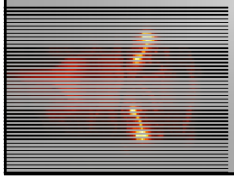
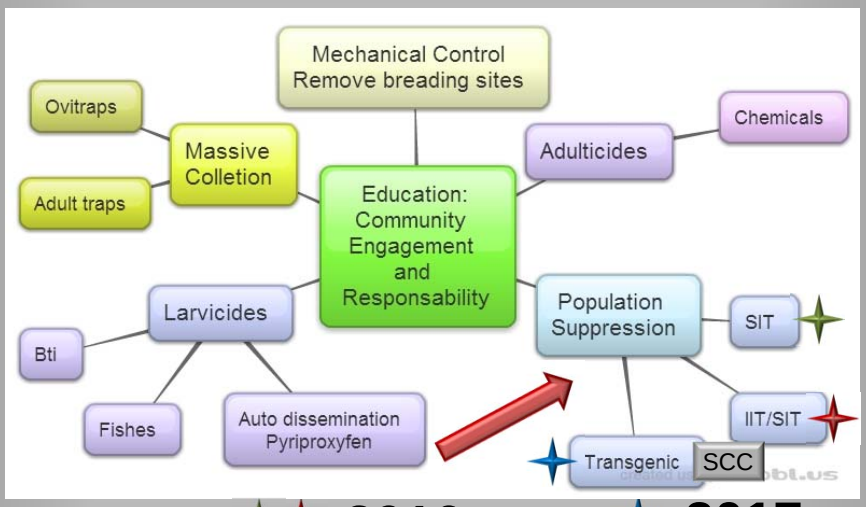


Production for Release



2016 **2017**

Capacity: 12 million males for release

Moscamed Brasil

UPAT

LEMI

Universidade de São Paulo

INCT - EM
PRONEX/DECIT