

# Vector Prevention and Control for Chikungunya

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# *Aedes* Group

- ▶ Egg:
  - Water-proofed egg shell, able to resist desiccation
  - Singly on soil or in container
- ▶ Larval habitat:
  - Floodwater, natural or artificial container

# *Aedes albopictus* 白紋伊蚊

- ▶ Wide distribution in Hong Kong
- ▶ Also known as Asian tiger mosquito
- ▶ Eggs
  - Laid singly on ground or above water line
  - Resist periods of desiccation
- ▶ All small water collections
  - Tree-holes, empty cans, bamboo stumps, tyres, saucers, etc.



# *Aedes albopictus*

- ▶ Mesonotum(中胸背板) marked with a longitudinal white line; legs with white strips
- ▶ Day biter (2 hours after sunrise and 2 hours before sunset)
- ▶ Exophilic. Rest in shady undergrowth, sometimes enter houses
- ▶ Limited flight range: ~100m
- ▶ Seldom laid all eggs in a single oviposition. Moving from place to place and only leaving behind a few eggs each time



# *Aedes albopictus*





Common breeding places



Common breeding places

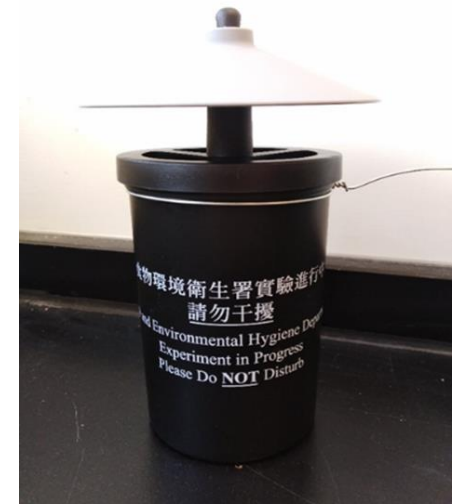


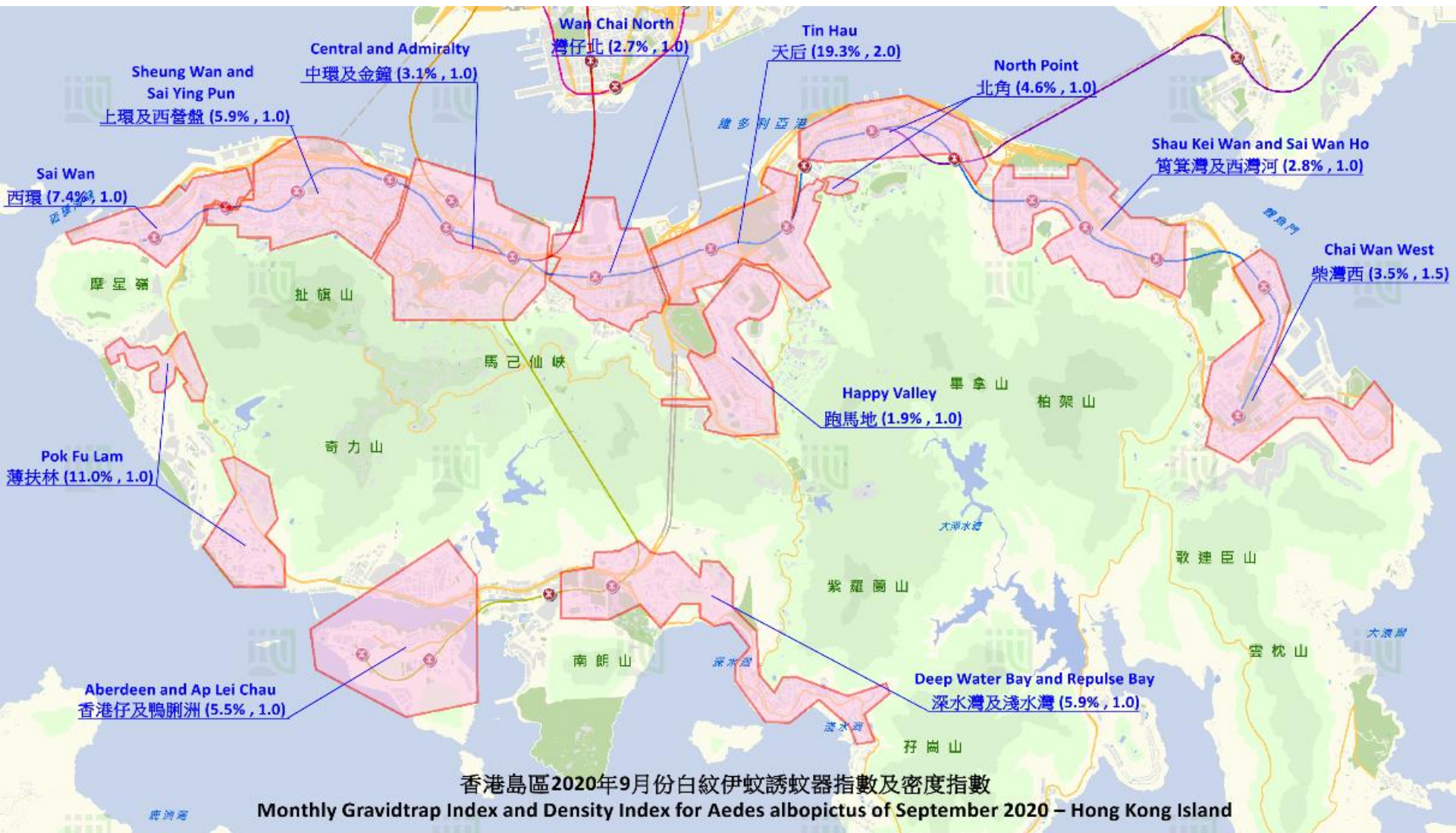
Common breeding places



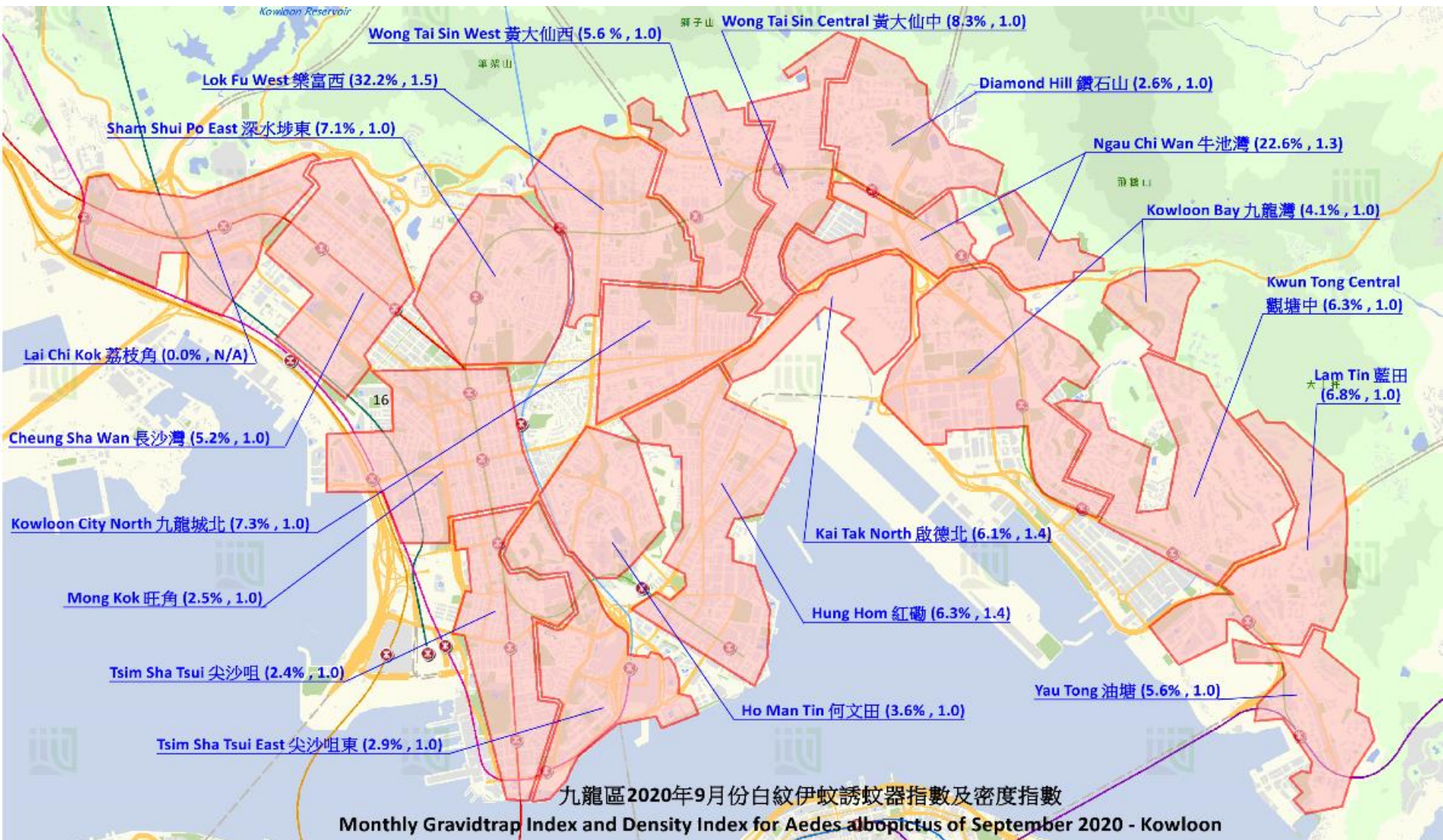
# *Surveillance by Gravidtrap*

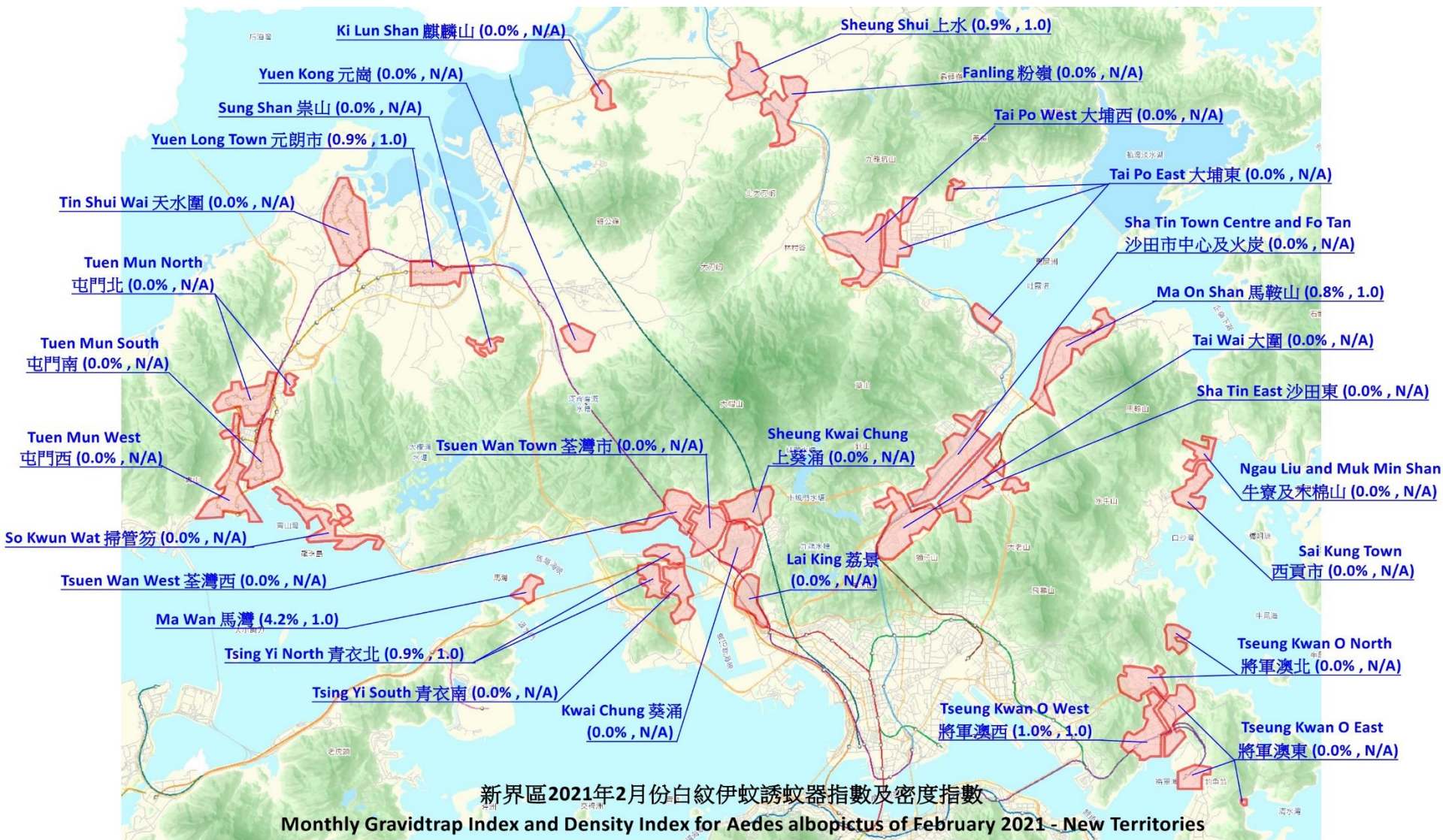
- ▶ Deployed as a surveillance tool to replace ovitrap since April 2020
  - Community
    - 64 areas (since Jan 2021)
    - About 55 gravidtraps in each area
  - Port areas – 31 ports in 6 groups
  - Each of 100 m apart











Four Indices will be enumerated

1. **Area Gravidtrap Index** for *Aedes albopictus*
2. **Area Density Index** for *Aedes albopictus*
3. **Monthly Gravidtrap Index** for *Aedes albopictus*
4. **Monthly Density Index** for *Aedes albopictus*

- ▶ The **AGI** and **ADI** indicate the extensiveness of the distribution and density of Aedine mosquitoes respectively in that particular survey area
- ▶ The **MGI** and **MDI** are enumerated by pooling together all AGIs and ADIs of the same month reflecting the territory-wide situation of *Aedes albopictus*.

# *Mosquito Control*

## Source Reduction

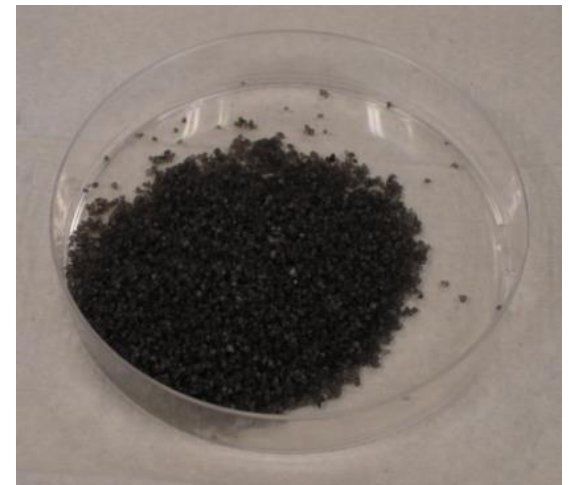
- ▶ Both mosquito larvae and pupae are aquatic
- ▶ Eliminate breeding places
- ▶ Stagnant water management
- ▶ Make environment less favourable to mosquito breeding
- ▶ Most effective and long-term control method



# Mosquito Control

## Larval Control

- ▶ Larvicidal oil (蚊油)
  - Hinder respiration of larvae and pupae causing suffocation
  - Evenly spread on water surface
  - Apply weekly
  
- ▶ Temephos (雙硫磷)
  - 1% S.G.
  - Organophosphate (有機磷類)
  - Contact poison
  - Apply weekly





- ▶ Insect Growth Regulators (昆蟲生長調節劑)
  - Juvenile hormone analogs / developmental inhibitors
  - Interference of moulting at larval / pupal stage
  - Pyriproxyfen
  
- *Bacillus thuringiensis israelensis H14 (B.t.i)*
  - Pro-toxin becomes effective after ingestion
  - Susceptibility depends on larval stage / dosage of ingestion
  - Biological safety: Specific, no effect on other non-target organisms
  - Environmentally friendly
  - Affected by concentration of organic matters in water
  - Higher cost

# Mosquito Control

## Adulticide

- ▶ Knock-down fogging
  - Immediate killing
  - Target area: Outdoor resting places
    - e.g. Dense vegetation areas, parks, dark and sheltered places, abandoned structures
  - Last < 2 days
  - Fogging machine
    - Ultra Low Volume (ULV)
  - S-bioallethrin + permethrin (e.g. Biogen™ / Topigen™ / Resigen™)



# Mosquito Control

## In2Care Mosquito trap

- ▶ A commercial mosquito trapping device that controls breeding of *Aedes albopictus* mosquitoes through the combined use of a chemical insect growth regulator (Pyriproxyfen) and a biological control agent (*Beauveria bassiana*, a fungus that parasitizes and kills insects).
- ▶ As a supplementary mosquito control measure in environments with dense vegetation, where potential mosquito breeding places may be numerous and/or difficult to be accessed.



# In2Care Mosquito trap



**Thank You**