

# Using Wolbachia mozzies to battle dengue

COMBATING dengue involves various strategies, one of which is the release of mosquitoes infected with Wolbachia bacteria to prevent the virus' transmission.

In the Petaling district, Selangor government has implemented this strategy in 21 localities.

According to state public health and environment committee chairman Jamaliah Jamaluddin, as of the 19th epidemiological week (May 6 to 12) in 2024, eight out of the 10 localities involved achieved a reduction in dengue cases since 2019.

Dengue cases in these eight areas decreased by 6% to 90%. However, two localities experienced an increase in dengue cases: Vista Lavender in Bandar Kinrara saw a 90% increase, and Desa Mentari Apartment in Petaling Jaya experienced a staggering 134% rise.

Jamaliah, in a statement to *StarMetro*, noted that the release of Wolbachia-infected mosquitoes had been effective in controlling dengue, but its success depended on the proportion of such mosquitoes in the locality, which should exceed 80%.

"To control dengue effectively, the frequency of Wolbachia-infected mosquitoes in a population needs to be high enough to significantly reduce the transmission of the virus.

"The threshold often mentioned is around 80% – meaning that at least 80% of the

mosquito population should be infected with Wolbachia."

She added that the Wolbachia mosquito initiative was still in the pilot phase in dengue hot-spot areas in Selangor, so raising awareness on this measure was not yet a primary concern.

Dengue Prevention Advocacy Malaysia (DPAM) co-chairman Prof Dr Zamberi Sekawi said the best strategy to release Wolbachia-infected mosquitoes was to clear an area of any mosquito breeding grounds before conducting fogging.

"This ensures long-lasting effectiveness, as eliminating dengue-bearing mosquito breeding sites reduces their population prior to the introduction of Wolbachia-infected mosquitoes," he said when contacted by *StarMetro*.

Wolbachia is one of several preventive strategies to combat dengue, but it is costly compared to other options available today.

Health Minister Datuk Seri Dr Dzulkefly Ahmad had on June 8 said that a single Wolbachia-infected mosquito cost 50sen.

Prof Zamberi pointed out that Wolbachia-infected mosquitoes needed to be bred in a laboratory, and thousands would be needed to ensure their effectiveness.

Universiti Putra Malaysia (UPM) Medical Microbiologist Department senior lecturer Dr Norashiqin Misni agreed that the cost to produce Wolbachia-infected mosquitoes was high, including research



Zamberi: Wolbachia-bearing mosquitoes need to be bred in a laboratory.

and pilot studies.

"However, once the wild mosquito population has been replaced with the Wolbachia strain, nature will take its course.

"They will breed on their own without needing to be released from the lab and without the need for fogging," she said.

The use of Wolbachia-based control to reduce dengue cases has been researched in countries such as Australia, China, Singapore, Indonesia, Thailand, Vietnam, Brazil and Colombia.

This biological control method works by releasing mosquitoes infected with the Wolbachia bacteria, which inhibit the mosquito vector from transmitting the dengue virus.

Infected lab-grown mosquitoes that mate with wild mos-

## Facts on Wolbachia-infected mosquitoes



The Star graphics

### Is Wolbachia safe for the people and environment?

Laboratory and field-based research concludes that mosquitoes with Wolbachia are safe for people, animals and the environment. It is an environmentally friendly intervention that uses naturally occurring bacteria already found in many insect species. Wolbachia cannot be passed to humans or other mammals. It can also reduce the usage of insecticides.

### How does Wolbachia increase throughout the mosquito population?

Wolbachia-infected mosquitoes will go through the cytoplasmic incompatibility which is the failure of a cross to produce offspring. It enables the number of Wolbachia-infected mosquitoes to increase in a population. Wolbachia can only be transmitted from parent to offspring inside the female's egg.

### Will Wolbachia-infected diseases hurt more than a normal mosquito bite?

No, people who are bitten by an *Aedes Aegypti* mosquito carrying Wolbachia will not notice any difference.

### Cytoplasmic incompatibility



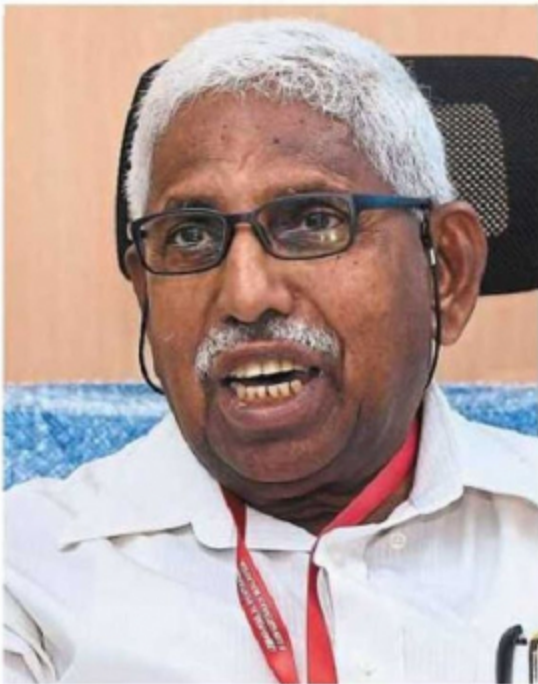
Source: World Mosquito Program

quitoes do not produce viable offspring, thereby reducing the population of virus-transmitting mosquitoes over time.

In Malaysia, Wolbachia-infected mosquitoes have been released in 35 localities including Kuala Lumpur, Selangor and Penang.

According to Dr Dzulkefly, 19 of the localities involved recorded decreases in dengue cases ranging from 43% to 100% since the introduction of this project in 2019.

The project is still ongoing. —  
By LEW GUAN XI and MEGAT SYAHAR



Thinatayallam: Close cooperation within the community is key to preventing dengue.

sider the vaccine if procured by the government.

"If the government procures the vaccine, I will take it even if I need to pay. Prevention is always better than cure," he said.

He also called on the state government to ramp up its dengue awareness campaign through various media channels.

Taman Melawati in Gombak was listed as one of the dengue hotspots in the 21st epidemiological week (May 20 to 26).

For Kajang resident Kam Kim Tong, 58, current state-level dengue prevention measures failed to address the root cause, namely poor cleanliness.

Having a 4.6m x 1.8m garden filled with *pandan* and potato leaves in his compound, Kam said he cleaned the plot at



Kam weeding his garden to keep it clean. He says authorities have failed to address the root cause of rising dengue cases.

least once a week to keep mosquitoes away.

"The cleaning includes weeding and pruning of overgrown leaves, which could become a suitable breeding ground for the mosquitoes," he said.

Kam, who had no plans to take the dengue vaccine, called for improved law enforcement to deter littering.

He also suggested state aid for residents associations (RAs) to support dengue prevention initiatives such as *gotong-royong*.

"The amount of allocation can vary depending on the population size in the RA jurisdiction.

"Competitions between different residential areas can also be held.

"The cleanest area should

receive extra reward as motivation," he added.

In response, Jamaliah said RAs could apply for assistance through their respective councilors.

"The state government has provided funds to local councils for dengue control and prevention programmes," she said.

It was previously reported that Selangor government had allocated RM4.4mil in its budget for 2024 for such programmes.

"We also have designated funding for dengue programmes through our health volunteer team, 'Sukarelawan Kesihatan Komuniti Selangor' (Suka), which has been established in each state constituency," Jamaliah added.



Fogging being carried out by Ampang Jaya Municipal Council at Permai Puteri Apartment in Taman Dato Ahmad Razali in February. — Filepic

Thinatayallam Ponnusamy, chairman of the joint management body of Puchong's Vista Lavender Apartment – one of the dengue hotspots in the state – said close cooperation within the community was key to preventing the viral disease.

"My staff will report the num-

ber of recorded dengue cases every day through a community group chat to keep the residents informed.

"If everyone does their part to maintain the cleanliness of their own compounds, the dengue situation will surely improve," he said.