# Effects of Temperature on Mosquito Larvae Presence in Different Container Types of Varee Chiang Mai School, Mueang District, Chiang Mai

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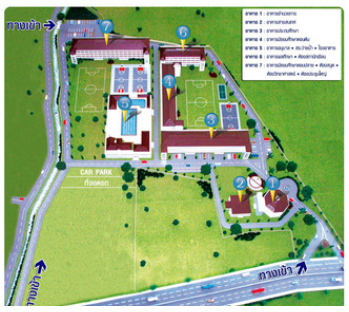
## Background and Rationale

Mosquitoes are major vectors of infectious diseases such as dengue and malaria, posing significant public health challenges, particularly in tropical regions. Climate change has accelerated mosquito development and increased disease transmission rates. Varee Chiangmai School, located in Chiang Mai Province, contains multiple water-holding areas that serve as potential mosquito breeding sites. This study investigates the effects of water temperature and container types on mosquito larval occurrence to provide baseline data for effective larval control and enhanced public health awareness.

## Scope of Study

Varee Chiangmai School, 59 Moo 6, Mahidol Road, Nong Hoi Subdistrict, Mueang Chiang Mai District, Chiang Mai 50000

### Study Area

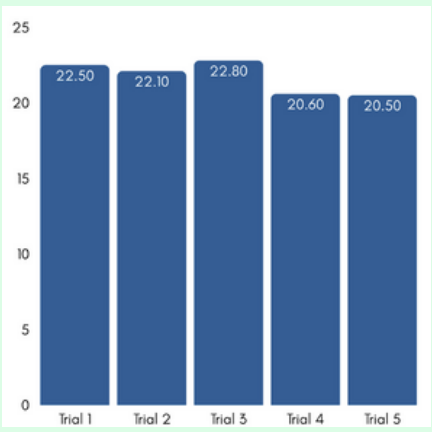



## Equipment and Materials

| | | | |
|---|---|---|---|
| 1 Beaker | 2 Bucket | 3 Dropper | 4 forceps |
| 5 Petri dish | 6 Spoon | 7 Stereo microscope | 8 Thermometer |

## Results

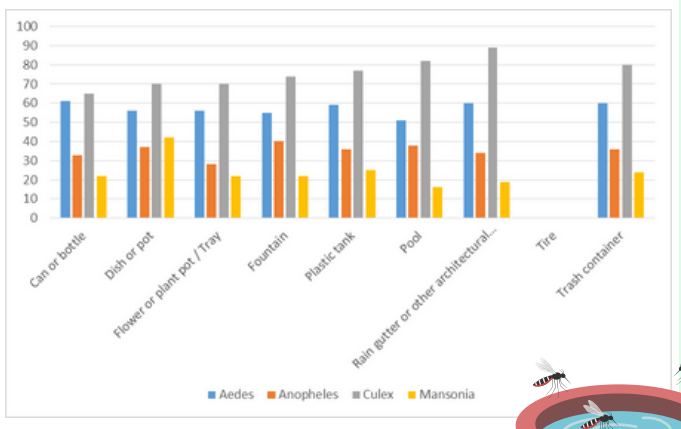
### The average of water temperature




The temperatures ranged from 20.50°C to 22.80°C. The highest temperature was observed in Trial 3 (22.80°C), while the lowest was recorded in Trial 5 (20.50°C). Trials 1 and 2 showed relatively similar temperatures at 22.50°C and 22.10°C, respectively. Overall, the results indicate moderate variation in water temperature across the experimental trials. Based on these measurements, the average water temperature across the five trials was 21.5°C.

### The number of mosquito larvae species found

The data in the table above indicate that a total of 1,539 mosquito larvae were found, comprising 458 Aedes larvae (29.76%), 282 Anopheles larvae (18.33%), 607 Culex larvae (39.44%), and 192 Mansonia larvae (12.47%).




### Calculation of the Container Index (CI)

A total of 227 containers were inspected, and larvae from several mosquito genera (Aedes, Culex, Anopheles, and Mansonia) were identified. Aedes larvae were detected in eight containers, resulting in a Container Index (CI) of 3.52%, which is classified as low risk.

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## Research

- **Research Objective**

To study the effect of water temperature on the quantity of mosquito larvae and compare the species found within the school premises.
To disseminate the research findings to the school and local community for preventive purposes.

- **Research Questions**

1. Do differences in water temperature affect the number and emergence rate of mosquito larvae?
2. What are the predominant species of mosquito larvae found in the study area, and how do they correlate with water temperature?

- **Research Hypotheses**

As water temperature increases, the population of mosquito larvae will increase. The environment in which the larvae reside significantly influences their growth and species distribution.

Higher water levels generally lead to an increase in the number of larvae, though this is also contingent upon the type of container.

## Research Methodology

This research project employed a comparative survey methodology to investigate mosquito larvae species.

The study comprised the following sequential methods:

1. Formulate research questions
2. Define the Study Area for Mosquito Larvae
3. Study the water temperature in the Survey Area
4. Collect Mosquito Larvae
5. Study Mosquito Larvae Species
6. Record the results on the GLOBE Mosquito Habitat Mapper

**Collection of Mosquito Larvae for Study and Investigation of Mosquito Larvae Species.**

**Part 1: Defining the Study Area for Mosquito Larvae:**

1.1 Prepare equipment for collecting mosquito larvae.
1.2 Survey the environment within the school vicinity to identify water-holding areas that may serve as mosquito breeding sites.
1.3 Mosquito larvae were collected and placed in prepared containers once weekly on Thursdays over a five-week period, from November 13 to December 11, 2025.

**Part 2: Studying Mosquito Larvae Species:**

2.1 Prepare equipment for studying mosquito larvae characteristics: stereomicroscope, petri dish, beaker, forceps and dropper.
2.2 Place mosquito larvae in the petri dish and add a small amount of water.
2.3 Place the petri dish onto the stage plate of the stereo microscope.
2.4 Study the characteristics of the mosquito larvae.
2.5 Record the results on GLOBE Mosquito Habitat Mapper

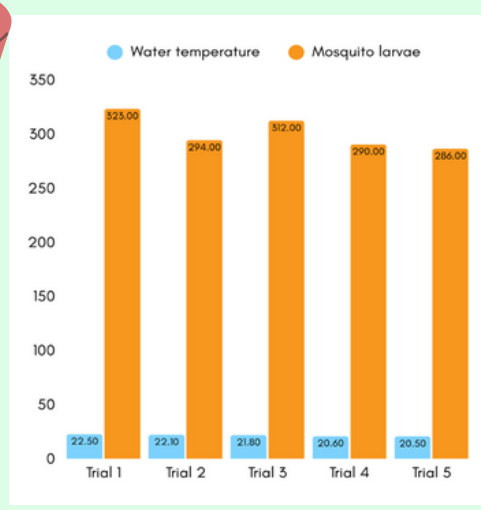
**Studying Water Temperature**

1. Prepare a thermometer and tie a string to it to avoid direct hand contact.
2. Hold the string and immerse the thermometer in the water at three different points.
3. Record the results.

## Discussion and Conclusions

The study revealed that the water temperature in the area was 21.5 degrees Celsius, with a total of 1,539 mosquito larvae. The most prevalent species was Culex larvae, accounting for 39.44% of the total.

The findings indicate that mosquito larval abundance tends to increase at higher water temperatures, particularly within the range of 21.8–22.5 °C, where higher larval counts were observed compared to lower temperature conditions. These results demonstrate a positive relationship between water temperature and mosquito larval abundance, supporting the research hypothesis that higher water temperatures are associated with increased mosquito populations.




Although water temperature influenced mosquito larval abundance, overall breeding levels in the study area were low. The Container Index (CI) of 3.52% classified the area as low risk, indicating that only a small proportion of water-holding containers contained mosquito larvae. These findings suggest that environmental conditions and existing sanitation measures were generally effective in limiting mosquito breeding. However, continued surveillance and source reduction are recommended to prevent future increases in mosquito populations and reduce the risk of dengue transmission.