

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**STAGE-STRUCTURED POPULATION DYNAMICS OF AEDES
AEGYPTI IN SHAH ALAM**

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

The primary factor of the dengue virus, *Aedes aegypti*, has a population dynamic that is influenced by rainfall fluctuations. The objective of this study is to simulate mosquito growth and survival rates throughout their entire life cycle as they relate to the distribution of rainfall. The transition matrix of the Lefkovich matrix model was used to represent the dynamics of the mosquito population. There are five stages in the life cycle of *Aedes aegypti*: egg, larva, pupa, Adult 1 and Adult 2. The transition matrix was built using these five phases of the life cycle of the mosquito. The distribution of rainfall in Shah Alam in 2022 is used as the dependent variable to calculate the *Aedes aegypti* egg-hatching transition rate. The study concentrated on Shah Alam, Selangor because there have been the most dengue cases reported in Malaysia. The results of this study indicate that the distribution of rainfall impacts the population of *Aedes aegypti*. The growth of *Aedes aegypti* will be determined by the availability and amount of rainfall. Most of the monthly observations demonstrated that the population of *Aedes aegypti* increases as the rainfall distribution increases. However, because mosquito larva develops only in standing water, too much water will lead to population extinction. To improve prediction accuracy and learn more about the *Aedes aegypti* population, the study needs to do additional research on survival and hatching rates dependent on the current environment.