

UNIVERSITI TEKNOLOGI MARA

**DENGUE VECTOR BREEDING
HABITAT AT SUBURBAN AREA IN
TANGKAK, JOHOR**

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ABSTRACT

Dengue fever is an urban vector borne disease transmitted by *Aedes aegypti* and *Aedes albopictus*. Both species lay their eggs in favorable breeding containers either in natural or artificial containers. Thus, an understanding of *Aedes* species habitat characteristics is important in reducing dengue fever outbreaks. A minimum 100 houses were inspected in the residential area for *Aedes* species in Tangkak District. Larval surveillance and water quality analysis were conducted to identify water breeding characteristic while larval species identification was conducted to determine dominant species in Tangkak District. The most efficiency preference breeding container of *Aedes albopictus* were flower pots. pH and turbidity are considered as the water parameters that support the development of *Aedes* larvae with p-value 0.001 respectively. By identifying the key of habitat characteristic of *Aedes* species though larval surveillance, the vector control can be apply throughout the Tangkak District

Keywords: *Aedes aegypti*, *Aedes albopictus*, breeding habitat, water quality characteristic, Malaysia

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CHAPTER ONE

INTRODUCTION

1.1 Research Background

Mosquitoes can be found all over the world and are commonly known to pose significant threats to public health. There are approximately 3500 mosquito species in the world, of which 200 species cause diseases in humans (Rufalco et al., 2016). The biodiversity of mosquitoes is evident with many genera having worldwide distribution and some genera with limited or endemic distribution. The common fear for mosquitoes is their role as vectors that can spread diseases such as Dengue, Malaria, Filariasis, Yellow fever, and Japanese encephalitis (JE). One of the familiar urban diseases that keeps increasing is dengue. A study found that the number of dengue infection to be around 39 million every year (95% of the credible interval ranging between 284 and 528 million), of which 96 million (between 67 and 136 million) display severity of disease (Koenraadt et al., 2006). A different study done on this stated that nearly 3.9 billion populations in around 128 nations face higher incidence of dengue infection (Stanaway et al., 2016).

In Malaysia, the outbreak of dengue cases is one of the major problems which seems to be a global issue as well. According to Rozilawati et al. (2007), the first outbreak occurred in Penang around 1901–1902. The infected females of *Aedes aegypti* and *Aedes albopictus* are the most common in transmitting dengue virus to humans. Rain-filled receptacles in gardens may dry out in a few days or weeks. This habitat is favoured by *Aedes aegypti*, which can act as a vector of dengue and yellow fever, and by *Aedes albopictus*, also a dengue vector referred to as the Asian tiger mosquito by Americans. These species also breed in containers that are used to store water for washing or drinking.

Aedes aegypti are commonly found inside the house, while *Aedes albopictus* are more commonly found in open spaces with shaded vegetation and suitable breeding sites such as car tires and garbage dumps. As an effective vaccine for dengue is not yet available, dengue control is limited to reduction of the vector population. Although it is insufficient to accurately predict the risks of human infection, dengue