

UNIVERSITI TEKNOLOGI MARA

**EVALUATION OF SELECTED
INSECTICIDES AGAINST BRINJAL
SUCKING INSECT PESTS AND
THEIR EFFECT ON NATURAL
ENEMIES**

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ABSTRACT

Brinjal is one of the most widely cultivated in the world and able to produce high yields even though under hot-wet environment. However, the production of brinjal becomes low because of some sucking insect pests. The major sucking insect pests on brinjal are thrips (*Thrips palmi*), whitefly (*Bemisia tabaci*) and aphid (*Aphis gossypii*). The applications of insecticides are important in controlling of brinjal pests but it also causes adversely effects on the natural enemies of pests. Therefore, this study was carried out to examine the effect of selected insecticides on brinjal sucking insect pests, natural enemies and the changes in the interactions between pests and natural enemies after application of these insecticides in brinjal ecosystems. The studies were conducted at “share farm” UiTM Melaka, Campus Jasin in an open field condition for two cropping periods. The selected insecticides consist of neonicotinoid groups include imidacloprid, acetamiprid, dinotefuran and cyantraniliprole. Among the treatments being tested for their effectiveness in suppressing sucking insect pests, it was observed that acetamiprid gave the best control for thrips and imidacloprid gave the best control for whitefly and aphids. For natural enemies (spider), imidacloprid and cyantraniliprole were classified as moderately harmful while acetamiprid and dinotefuran were classified as harmless or slightly harmful. The results also showed that there was an interaction between spider with thrips and aphids but no interaction between spider with whitefly after treatments application. The significance of this study would give a great deal of contributions to farmers in terms of choosing the most effective insecticides on pests whilst at the same time safer on natural enemies.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Brinjal (*Solanum melongena*, L) is a family of Solanaceae and one of the most widely cultivated crop in the world (Kandoliya *et al.*, 2015). It has approximately consisted of 1400 species (Sandra *et al.*, 2013). The common names of *Solanum melongena* are eggplant, aubergine and melongena (Randhawa and Singh, 2016). In Asia and Mediterranean countries, brinjal is one of the most important foods for people consumption and rank in the top five of fruit vegetable crops (Taher *et al.*, 2017). Generally, brinjal in Malaysia consists of two types which are *S. melongena* and *S. macrocarpon*. *S. melongena* are known as elongated brinjal and *S. macrocarpon* are known as round brinjal. Brinjal can produce high yields especially in hot climatic areas such as China, Japan, Turkey and India (Adamczewska-Sowinska and Krygier, 2013). According to Docimo *et al* (2016), brinjal is good for human health because it contains high of minerals and vitamins, bioactive compound and low caloric value. All these contents are important to human especially when other vegetables are in short supply. In Malaysia, the productions of brinjal are low compare to other countries but the demand of brinjal is still increasing (Suhana *et al.*, 2016).

However, productions of brinjal become low due to some constraints. The major constraints are sucking insect pests such as *Aphis gossypii* Glover (Yadav and Kumawat, 2013), *Bemisia tabaci* Gen (Ghosal and Chatterjee, 2013) and *Thrips palmi* Karny (Ramchandra and Nian-Tai, 2012). Both aphids and whiteflies will suck the cell sap and disrupt the normal growth of the crop (Amitava *et al.*, 2011). Consequently, the crop becomes stunted; weak and the size of fruit become reduced (Amitava *et al.*, 2011). The ovi-position, feeding and virus transmission to brinjal by thrips will give effect to the fruits where it becomes aborted, deformed and scared (Ramchandra and Nian-Tai, 2012).

Whitefly (*Bemisia tabaci*) is one of the major sucking insect pests for many crops especially brinjal (Norhelina *et al.*, 2013). Both nymphs and adults feed on the