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Beyond Classical Approaches

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RELATIONSHIP BETWEEN FRUIT SIZE AND INFESTATION BY FRUIT FLY, *BACTOCERA DORSALIS* (DIPTERA, TEPHRITIDAE) ON *PSIDIUM GUAJAVA* (MYRTACEAE) AT SEMONGOK, SARAWAK

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ABSTRACT

Guava fruits of different sizes were collected from Semongok Agriculture Research Centre (ARC) in March, 2010 and then individually placed in plastic rearing containers in the laboratory at Universiti Malaysia Sarawak. Each fruit was weighed and the number of fruit fly larvae infesting it counted. The fruits weighed between 40 to 200 grams each. From 12 infested guava fruits collected, a total of 211 fruit fly larvae were counted. About half of them (53%) were successfully reared to adulthood. All emerged fruit flies were identified as *Bactrocera dorsalis*. The ratio of male to female was about 1:1 with an average infestation of 10 larvae for every 100gm weight of guava fruit. Thus the result obtained showed a strong and positive correlation between the number of fruit fly larvae and the weight (size) of guava fruit they infest. It may be implied that adult fruit fly lays a certain number of eggs in a guava fruit based on the size of the fruit. This is important for the maximum survival of the off springs by avoiding competition among the siblings. Based on the data obtained, on average, each fruit fly larva correlates with 15gm of guava fruit by weight to support its full development to the adult stage.

Keywords: *Bactrocera dorsalis*, fruit fly, *Psidium guajava*, infestation, correlation.

INTRODUCTION

The tropical fruit fly, *Bactrocera dorsalis* (Diptera, Tephritidae) forms a species complex and is a major pest of tropical fruits which include guava, star fruit, oranges, lemons, papaya, and banana among the few commonly known host plants. It is widely distributed, especially among the tropical countries.

The objective of this study is to determine whether or not there is a correlation between fruit size and the number of larval infestation by *B. dorsalis* on *P. guajava*. The information obtained would disclose some important information on the infestation of guava fruit by *B. dorsalis*. This includes the average amount of food required by each fruit fly larva to develop normally, and the question of whether or not more than two strains of *B. dorsalis* complex or two different species of *Bactrocera* would lay eggs in the fruit that had been previously oviposited by a fruit fly. Estimation of the larval population on each tree or in an orchard can be made with good confidence and, thus, the projection on the population

size of the pest at certain time of the year to facilitate better control of them.

According to study done by Leong (1988) on infestation of fruit flies on guava, he found that fruit flies were highly infested the matured green and ripe guava fruits rather than immature green fruits. The air temperature, population density, and ripeness of guava fruits are the probabilities that affecting the infestation rate of fruit flies on guava fruits.

MATERIALS AND METHODS

Guava fruits of different sizes were collected from Semongok Agriculture Research Centre (ARC) in March, 2010. They were individually placed in plastic rearing containers, cushioned with scrambled used news paper to absorb excess fluid and at the same time provide substratum for fruit fly larvae to pupate, when fully developed (Figure 1). The fruits were individually weighed by using weighing scale. The number of fruit fly larvae were counted and recorded for each fruit. The data obtained