

SUMMARY

WIWIK NURJAYANTI. 0410460044-46. Population Fluctuation of Fruit Fly, *Bactrocera carambolae* DREW & HANCOCK (Diptera: Tephritidae) and it's Parasitoid on Star Fruit Plant (*Averrhoa carambolae*) in Blitar . Supervised by Dr. Ir. Toto Himawan, MS. and Dr. Ir. Sri Karindah, MS.

Bactrocera carambolae Drew & Hancock (Diptera: Tephritidae) is a pest which attack on stair fruit, guavas, mango, papaya, melons, chillies, and tomatoes. Fruit fly is a important pest of horticulture plant in Indonesia. There are four controlling methods to decrease the population of fruit flies. They are mechanic control, cultural control, chemical control and biological control There are some parasitoids of fruit fly's egg and larvae, which are belongs to Opiinae (Braconidae) and Chalcidoidea. Parasitoids of fruit flies are *Fopius* sp, *Psytalia* sp, *Diachasmimorpha longicaudata* and *Tetrastichus* sp. Results of this study are to be used as a basic for management or monitoring and determination of biological control measures.

The objective of this research was to know the population of fruit flies *B. carambolae*, and its parasitoid on star fruits plantation. This research was conducted at Kalipang District Sutojayan and Karangsono District Kanigoro, Blitar and Pest Laboratory of Plant Protection Department, Agriculture Faculty, Brawijaya University from December 2007 until April 2008.

To know the fluctuation of fruit flies population and it's parasitoid was done by survey at star fruit plantation which were at the orchard and rice habitat. From each type of field were determined 2 plots of star fruit purposively. Four star fruit trees were selected as sample tree from each plot with a distance of approximately 4 m Methyl eugenol's traps were placed on the samples tree Four star fruits were picked up from each sample tree, and collected two star fruits which haad been felt down on the ground.and 2 star fruit which had been fall down in the ground were collected. Soil samples (25 cm² and 2 cm depth) were also taken from surrounding the sample tree to observe the population of fruit fly pupae. The entire samples were carried to the laboratory and were kept until all fruit flies and the parasitoid emerged. Fruit flies and the parasitoid were counted and the spesies of parasitoid were also identified. All data were analyzed using T test ($p=0,05$).

Male fruit flies population in the orchard significantly different from the population of male fruit flies in rice habitat ($p = 0,03$). Fruit flies population in the orchard and rice habitats 687,97 and 543,59. The average number of adults fruit fly in the orchard were not significantly different ($p=0.134$) with in the rice habitat. The average number of fruit flies adult emerged from orchard's fruit samples and rice habitat were 70.13 and 105.88, respectively. The average number of adults fruit fly emerged from soil samples of fruit star orchard were not significantly different ($p=0.54$) with in rice habitat. From soil samples in the fruit star orchard and rice habitat were collected some fruit fly pupae, which were only 4.94 and 3.50 became adults.

Parasitoids of fruit fly *B. Carambolae*, which were found on the star fruit's orchard and rice habitat, were *Fopius* sp, *Psytalia* sp, and *D. longicaudata*. The parasitism level in the orchard and in rice habitat was 37.8% and 30.4%, respectively. The number of parasitoids collected from fruit samples ($p=0.73$) and soil samples ($p=0.14$) were not significantly different between star fruit orchard and rice habitat. The percentage of parasitization of *Fopius* sp., *D. longicaudata*, and *Psytalia* sp. were 86,51 %, 8,48 % and 5%, respectively in starfruit orchard. Whereas in rice habitat the percentage of parasitization of *Fopius* sp., *D. longicaudata*, and *Psytalia* sp were 93,08 %, 4,56 % and 2,35 %, respectively.

