

# Dynamics of the Population of Mediterranean Fruit Fly, *Ceratitis capitata* Wiedemann (Diptera: Tephritidae), Tirana, Albania

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**Abstract**— Mediterranean fruit-fly, medfly, *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae) record was kept in 8 medfly host-fruit trees, from April 2015 till December 2017, Tirana, Albania. McPhail yellow bottom traps (one per tree) with Biolure (3 separate dispensers of ammonium acetate, trimethylamine, and putrescine). Every container was labeled with: trap number, trap type, collection date, Station ID, location, last date serviced, and host. In laboratory we have done the identification and data analysis using the population index FTD (fruit fly/trap/day), the area is at high risk when FTD >1. On the average (medflies per tree-trap per day between December and early May)  $1 > \text{FTD}$ , except from June till October high records were detected. End-May till June records up to over 2.1 flies were observed (the first population peak in the year 2015&2016), while in September-October records up to 18.8 flies were observed (highest population peak in the year 2016). In the different years of the observation period, the peaks of the 1st flight were recorded in a range from mid-May- mid-June; peaks of 2nd flight were recorded from mid-July to end of August; peaks of 3rd flight were recorded from end of August to mid-October; An increase of medfly catches was always detected following Biolure dispensers renewal. In this study the medfly adult population, monitored by McPhail Biolure baited traps, is studied throughout the year in a typical suburban back-yard with medfly host-fruit trees.

**Keywords**— Fruit fly, dynamics, population, control.

## I. MATERIALS AND METHODS

The major commercial medfly host fruit-tree plantations are often found near cities or villages which have numerous host tree backyards. Back-yards usually contain several different medfly host trees, which means continuous medfly population growth throughout the year, as compared to commercial plantations composed of only one host-tree species or cultivar. The experimental back-yard used (Figs. 1 and 2) is located in Tirana and Elbasan. It contains 8 medfly host trees, the host trees are: a peach, a fig, a plum, a pear, 2 mandarins and 2 persimmons. Plantation distances are usually very short between trees or between trees and buildings, with tree canopies often intermixing. Jackson and Tephry traps were placed on Mid-April 2015 and were inspected till end-December 2017, except for the period December through March when due to the cold weather and absence of considerable numbers of adult flies, trap inspection was

conducted less frequently. One trap was placed per host tree. Traps were initially (Mid-April 2015) placed about one month before the first fruit-host mature. We used Tephry-trap® baited with Tripack®, a three component food-based synthetic attractant, with DDVP as toxicant.



Fig. 1. The mandarine dropped to the ground.



Fig. 2. The adult medfly (*Ceratitis capitata*) and other insects captured in one Tephry trap within one week.

Biolure medfly attraction into McPhail yellow-bottom traps proved more powerful when compared with Trimedlure (a powerful male selective medfly pheromone) and orange fruit volatiles. In the experimental back-yard, persimmons and mandarins ripen from November till January-February when they are completely consumed, while figs ripen from end July till mid-September when all had been consumed or dropped to the ground.

## II. RESULTS

In Figure 3, the population index FTD of flies per tree-trap per day, over the whole experimental years 2015-2017, are shown for Tirana, Albania. The trap catches in the different fruit trees were examined separately, major differences were observed due to the different fruit tree species, fruit maturation

status and fruit trees. Almost zero medflies were trapped from the end of December till mid-April. The medfly is present in three years of study in Tirana and in all cultivars of the study (peach, plum, pear, peach, persimmon and mandarin). The main host of fruit flies *C.capitata* is (mandarine, fig, persimmon, pear, plum) and the highest level in Tirana was recorded FTD=18.8 in October 2016. The dynamics of the population *C.capitata* depends a lot from abiotic factors, during 2016 the winter was cool and we see the maximum level of FTD=7.9 in October 2017. The above results suggest that the medfly adult population first appeared in substantial numbers in the traps in the second half of May and the population peak in September-October, was considerably higher than that of the summer.

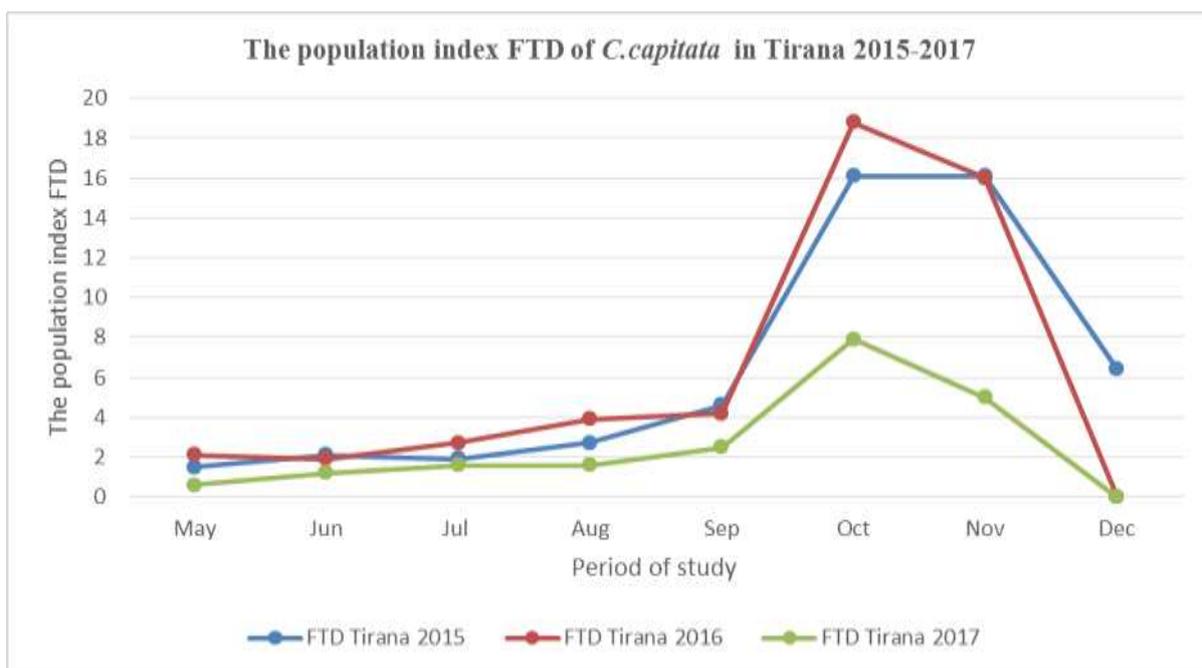


Fig. 3. The population index FTD during three years of study 2015-2017, Tirana, Albania.

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