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The Distribution of Mediterranean Fruit Fly *Ceratitis capitata* (Wiedemann 1824) in Albania

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***Abstract*—** *Ceratitis capitata (Diptera: Tephritidae), is a highly polyphagous species and and one of the major citrus pests andof fruit-growing crops. Fly damage results from both ovipositor in fruit, feeding by the larvae, and decomposition of plant tissue by invading secondary microorganisms (bacteria, fungi) that cause the fruit to rot. Their presence often requires host crops to undergo quarantine treatments, other disinfestations procedures or certification of fly-free areas. In this paper we are presenting the methodological approaches for assessing the distribution patterns in Albania. Following the climatic condition Albania is a country that create possibilities for growing up and development of a very kind of pest, including the Mediterranean fruit fly (Ceratitis capitata). The temperature and the humidity of environment is very suitable for the development of this kind of pest. Its impact on agriculture is very high, and for this reason it is crucial to evaluate its distribution in Albania. The monitoring of Ceratitis capitata population on different host plant: plum, apricot, peach, fig, kaki, mandarin, citrus and orange fruits during the year 2015-2016.*

***Keywords*—** *Medfly, monitoring, traps Tephry, traps Jackson, population.*

I. Materials and Methods

A biotechnical method using the traps Tephry and Jackson for *C.capitata* has been developed for the first time in Albania for an organic agriculture. We have used traps containing lures to monitor population size and distribution. Trap density is based on many factors including: trap efficiency, lure/attractant efficiency, location regarding altitude, type and presence of host, climate and topography. As in other tested species belonging to the subgenus *Ceratitis*, males are attracted to trimedlure and terpinyl acetate. Trimedlure (t-butyl-4(or5)-chloro-2-methyl cyclohexane carboxylate) is the most widely used lure for *C. capitata*. Jackson traps are mainly used with parapheromone lures to capture male fruit flies. The most common lures used with the JT are: trimedlure (TML), methyl eugenol (ME) and cuelure (CUE). The lure is added by suspending, from the center of the trap, a cotton wick soaked in 2 to 3 ml of a mixture of the parapheromone and an insecticide, usually malathion, naled or dichlorvos (DDVP strip 1 to 1.5 cm in length placed on the floor of the trap.), when the trap is used with ME or CUE but without insecticide when the trap is used with TML.The insecticide is used to prevent attracted flies from escaping. The Tephri trap is used with the female dry synthetic food lure and with trimedlure or ceralure in a plug as described for the JT. The traps placed in fruit trees at a height of about 2 m above ground and emptied regularly from fruit flies in an interval of every 10 days, the lure remain effective for a few weeks.

Fig. 1. Tephri trap.

Fig. 2. Jackson trap.

The main method of the study is to place Jeckson (J) and Tephry (T) traps in the form of a circle of 50 m radius in the areas studied according to the scheme shown (nucleus.iaea.org)

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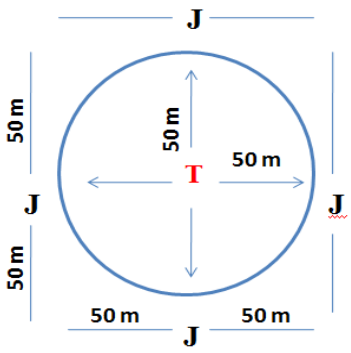


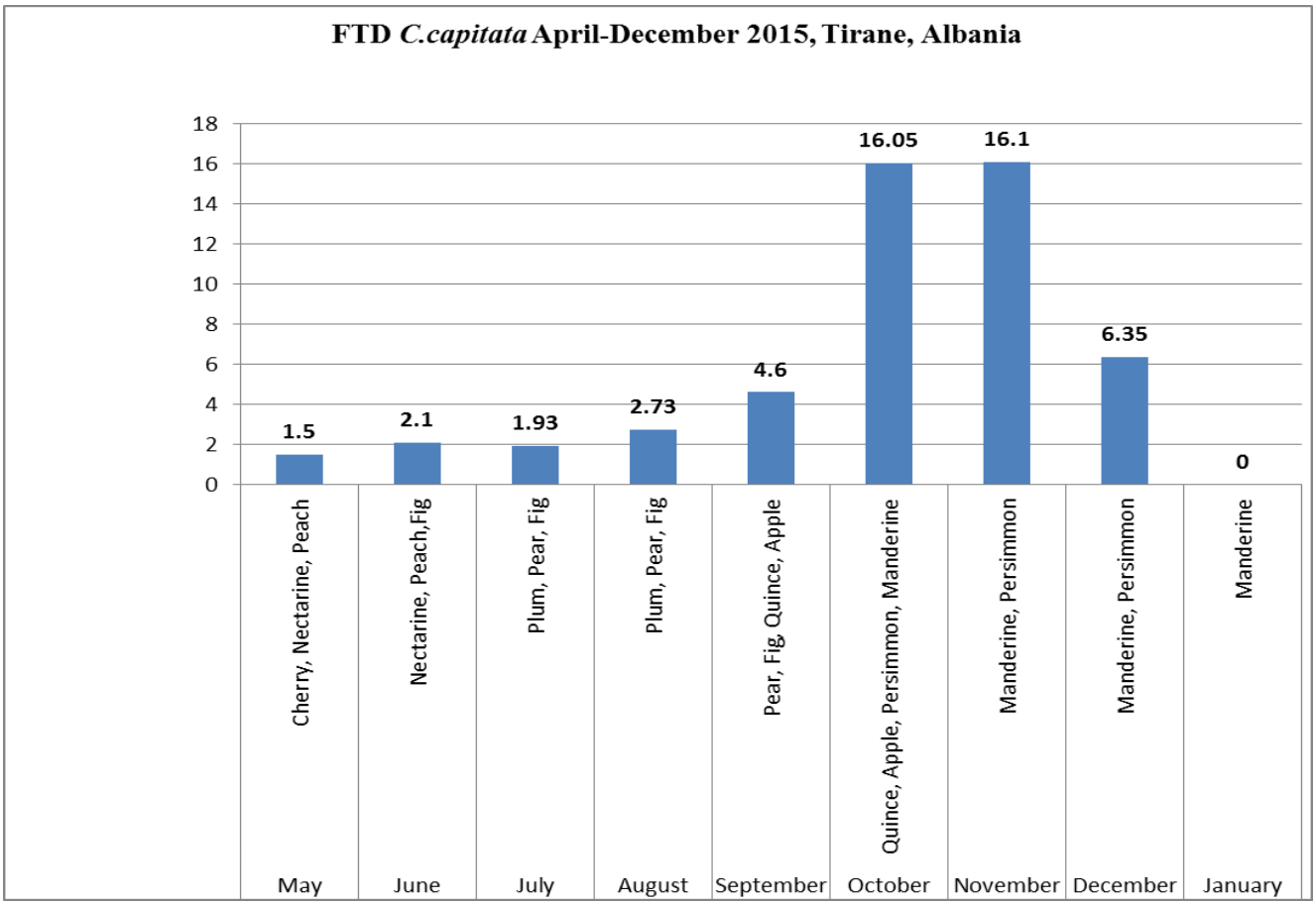
Trap Density
was usually clusters of 5 traps / area, with a 50 m distance between. Densities was adjusted based on presence of hosts, climate, topography and feasibility to reach the area frequently.

Placement
in semi-shaded spots of the manderina and other hosts; direct sunlight, strong winds or dust was avoid; with the trap entrance clear from leaves.

Trap Location Records
The location of the traps is geo-referenced with the use of a Garmin GPS equipment.

Labelling
Every container was labeled with: trap number, trap type, collection date, Station ID, location, last date serviced, and host.

II. Results and Discussion



In Tirana during the year 2015 the FTD = 16.01 in the November *C.capitata* is at very high levels.

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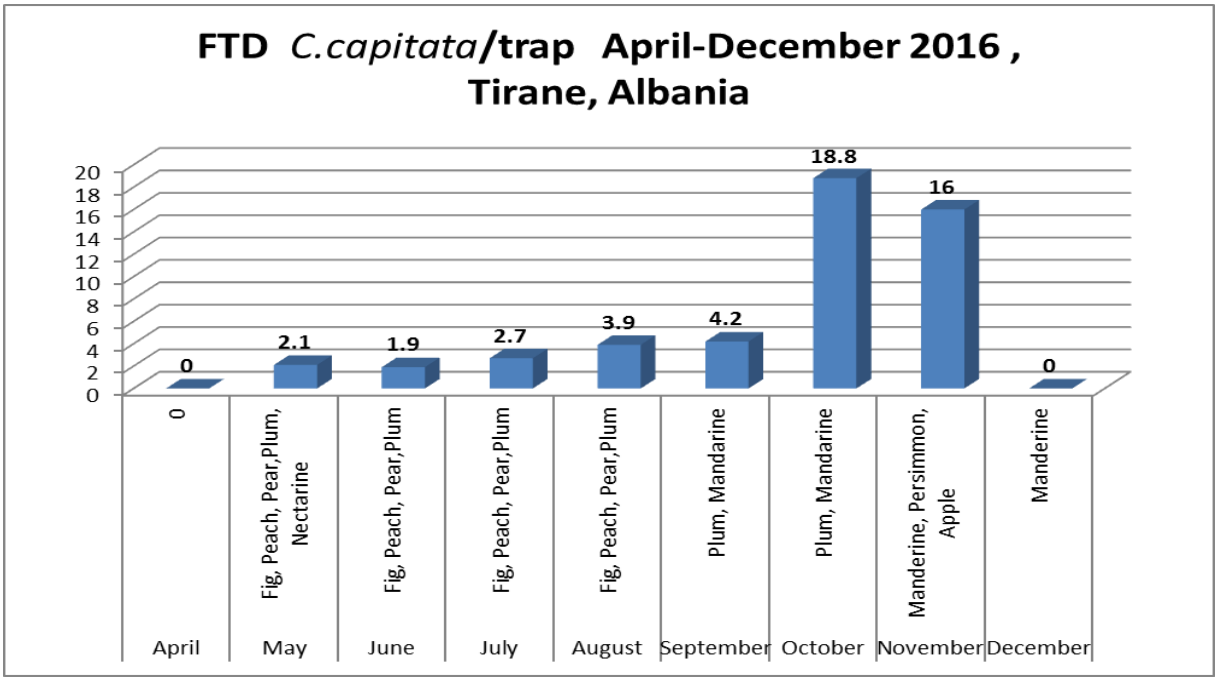
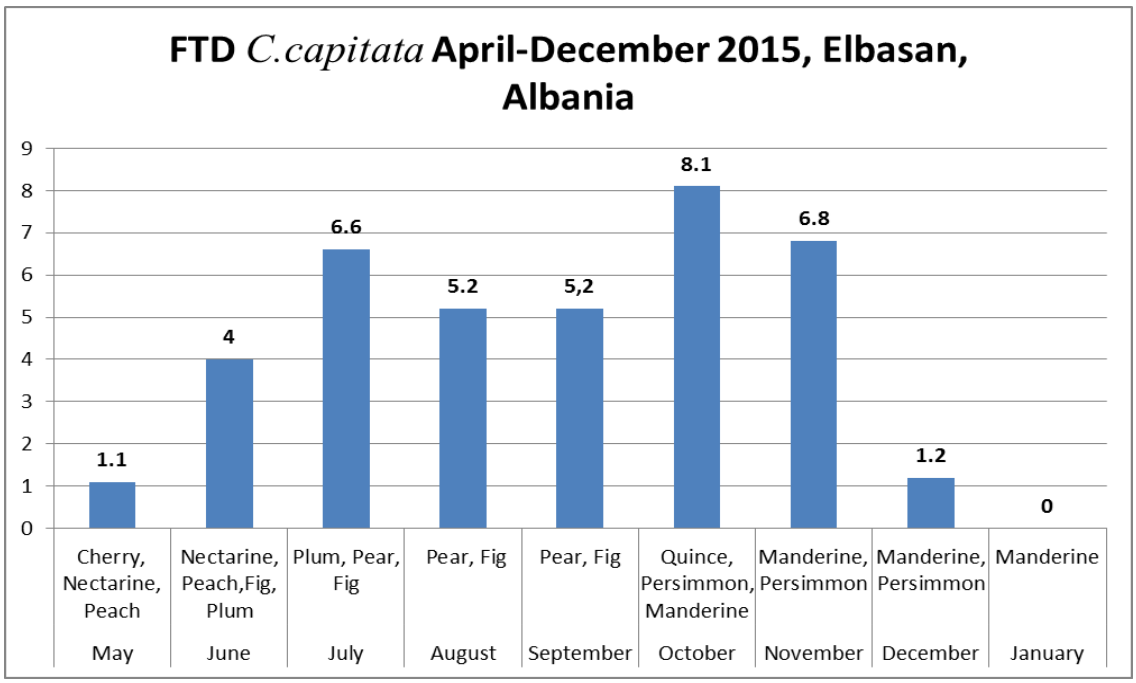


- *C. capitata* is well established with distinct seasonal fluctuation in Albania, the pest is present in all study areas Shkoder, Tirana, Elbasan, Lushnje, Vlore, Saranda.
- The earliest adult captures were recorded - end of May in nectarines orchard (Shkoder) 11-30 May, (Elbasan) in plumps and pears.
- The most infective area is Tirana, Elbasani, Vlora, Shkodra etc.
- The main host of fruit flies *C.capitata* is mandarine, fig, persimmon, pear, plum.
- Population density is low during May-July, increases during the first half of September.
- Peak of activity is within the period October- November. Adult activity ends in December.
- Fluctuation in FTD of *C. capitata* population is influenced by host fruit availability and abundance that increased from September, October and November.
- In October of the year 2016 the FTD=18,8 is in the highest levels. In Tirana the level of C.capitata in the year 2016 is more high that in the year 2015.



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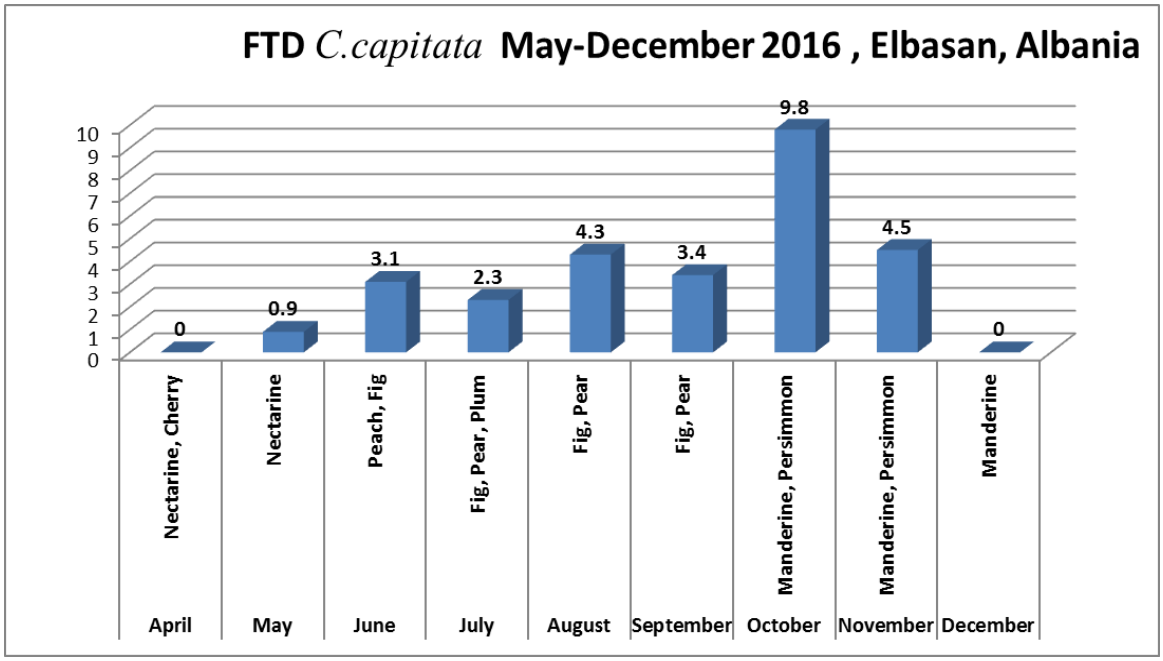

In Elbasan the level of C.capitata in the year 2016 FTD=9,8 is higher that in the year 2015 FTD=8,1.

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