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Integrated Control of Mediterranean Fruit Fly *Ceratitis capitata* (Wiedemann) by Mass Trapping in Tirana, Albania

Anila Gëzhilli[1], Enkelejda Velo[2], Silva Bino[2], Përparim Kadriaj[2], Eglantina Zaimaj[3], Natasha Haka (Duraj)[1]
[1]Faculty of Agriculture and Environment, Agricultural University of Tirana
[2]Vector Control Unit, Institute of Public Health
[3]Ministry of Agriculture and Rural Development, Tirana, Albania
Email address: anilagezhilli@yahoo.it, keladikolli@yahoo.com, silvabino@gmail.com, pkadriaj@yahoo.com, ina.zaimaj@gmail.com, natashahaka@ubt.edu.al

***Abstract*—** *The Mediterranean fruit fly Ceratitis capitata is one of the most destructive agricultural pests worldwide. It is one of the most difficult pests to handle. It is extremely polyphagous, it breeds a number of generations per year and its attacks occur close to harvest time. Mass trapping control techniques has been developed, in order to control medfly with the minimum amount of pesticide residue. This study aimed at evaluating the efficacy of Tephry and Jackson traps that we used to control the Mediterranean fruit fly (medfly) C. capitata (Wiedemann) (Diptera Tephritidae). The medfly is strongly attracted, enters into the traps and, being unable to escape, and dies. The efficacy of traps was compared with control strategies (mass trapping), assessing medfly captures and fruit damage (infested fruits on host trees and at the ground). Tephry and Jackson traps successfully control the pest population, decreases medfly fruit damage and provides long-term control (from fruit ripening until harvest) reducing pesticide application to a minimum or even making it completely unnecessary. This paper reports on trials undertaken to control established pest population.*

***Keywords*—** *Medfly, pest, mass trapping, host.*

I. Material and Methods

Field trials were conducted in Tirana, Albania with Mediterranean climate during 2015 till 2017. We used mass trapping system with two kind Tephry (T) and Jackson (J) traps. The mass trapping technique of the fruit fly based on the use of Tephry traps with the triple food attractant Biolure medfly R (ammonium acetate (FFA), putrescine (FFP) and trimethyllamine (FFT)) and with the parapheromone Trimedlure, both combined with an insecticide tablet of dichlorvos (DDVP). The mass trapping technique efficacy assessment was based on adult Medfly population expressed by recording every ten days the captures in the traps together with the assessment of fruit damage at harvest. The traps were hung at a height of 1.5 m approximately. To monitor the flight activity of *C. capitata*, control traps were placed in mid-April till the end -December. The main crops of the area are citrus, fig, peach, pear, apricot, and plums trees. More insects of the fruit fly were captured in the traps baited with the Ceralure medfly than in the traps baited with Trimedlure. Fruit damage assessment results also indicated less damaged fruits for the mass trapping based on Ceralure medfly compared to the parapheromone Trimedlure.

Fig. 1. The study area in Elbasan.

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

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II. Results and Conclusion

A high population of *Ceratitis capitata* level was present during all the fruit maturation period in the study areas. The results show that mass trapping system is a high protection on fruit against infestations of the medfly. This system successfully controls the pest population level, decreases medfly fruit damage and therefore gives a good opportunity to the IPM strategies as well as organic citrus and fruit harvests.

The population was low in spring months during the study. The main reason for this increase of the pest population at the beginning of summer is the alternative hosts of the pest such as peach, nectarine, pear, apricot, fig trees cultivated close to citrus orchards.

The pest population increases on these fruit trees and moves to citrus in late summer or autumn. During the winter months no adults were captured at the traps. The results of our study suggest that mass trapping is an effective system against *Ceratitis capitata*, as it is able to reduce pesticide application to a minimum or even makes it completely unnecessary.

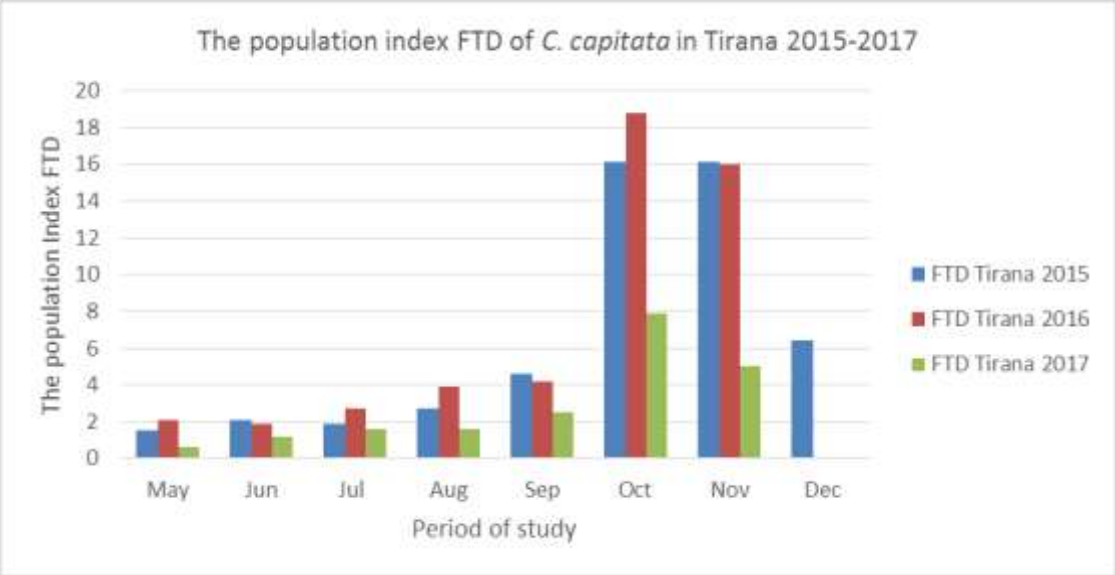

Fig. 3. The population index FTD during three years of study 2015-2017, Tirana, Albania.

For the population index FTD during the three years of the study there are statistical changes in level of the probability P=0.05.

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