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Monitoring of Olive Fly (*Bractocera olea*) with Innovative Methods in Olive Groves in Xara Commune in the South of Albania

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Abstract **— In the framework of cross-border projects between Albania and Greece is developed a project for monitoring of olive fly *(Bractocera olea)* with new monitoring tools. The goal of study was to find the right time for control of olive fly (*B.olea)* in order to produce the olive fruits and olive oil with minimal chemical residues. The second objective is reduction or avoidance of chemical residues in environment too. Olive production in Albania, as in all Mediterranean countries is an important economic activity. For monitoring is used McPhail trap and Pheromone of Dacus stick. Monitoring of weather data were collected from electronic weather station installed from the project budget. The data taken from this study had facilitate the producer work to take the right decisions for olive fly control with plant protection products. The messages distributed to the producers by SMS, website have been the communication channels with farmers.**

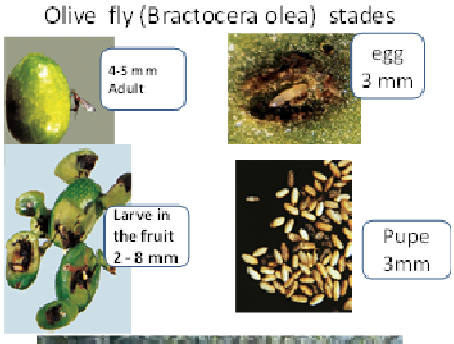
Keywords **– Olive Fly, Monitoring, Weather Station, Pheromones, Innovative.**

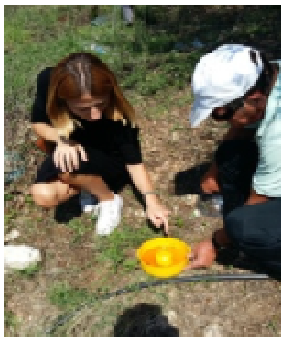
I. INTRODUCTION

Olive trees are cultivated in more than 50 % of territory and with more than 10 million olive trees. South part of Albania and Xara commune of Saranda district, is typical an olive cultivation zone. Olive fly is the key insect pest in olive production. The olive fly damages quantity as well quality of olive fruits for table and olive oil production. Olive fly is a Dipthera insect. Larvae of olive fly consume the pulp of the olive fruit. In infested olive fruits developed saprophyte fungus that are the main reason for increasing of olive oil acidity. In the Albanian conditions olive fly develop 4-5 generations for year. Olive fly hibernating in stage of pupa. In May –June period from pupa reaches adult stage. The adults put the eggs in the olive fruits when the stone is hard as a wood .Stage of the egg lasts 2- 10 days according to the climate conditions. The larvae stage is developed for 10-13 days during the summer and 20 days in the late autumn. The pupa is developed about 10 days in the summer and stays in the soil for 4 months until May of next year. The determination of right time of treatment with plant protection products plays an important role for a professional plant protection practice. In this study are used some models of pheromone traps for monitoring of olive fly in field conditions.

II. MATERIALS AND METHOD

For monitoring of adults are used the traps of type McPhail. This type is constructed with two plastic boxes, one below and one above as a cap. The box is filled with water mixed with Diamon Phosphate. During the fermentation of Diamon Phosphate is created an aroma as ammonia. This aroma attracts adults of olive fly. The plastic boxes have some holes from which entered flies and not leave them to come out. The alive adult flies then are counted and moved from the trap in order to avoid the recounting of the next control. In some cases are used the Pheromones of the type Dacus stick. Control of Mcphail trap and Dacus stick are controlled every week. Another element for preparing the messages for the farmer is the electronic weather station installed from the Olive -project in Xara commune. The climate data taken from weather station has helped to inform the farmers for forecasting of intensity of infestation of olive fly larvae.





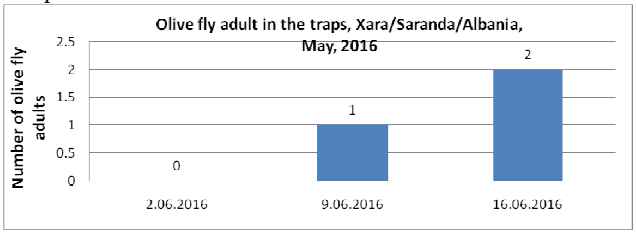
Mcphail traps and weather station.

III. RESULTS

Tab.1

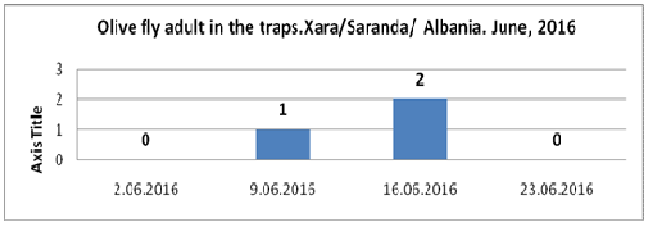
Number of control points with traps	Number of olive fly adults according to the monitoring days (May, 2016)		
	9.5	16.5	23.5
1	0	0	0
2	0	0	1
3	0	1	0
Total	**0**	**1**	**1**

Graph.1



Tab.2

Number of control points with pheromones traps	Number of olive fly adults according to the monitoring days (June, 2016)			
	2.6	9.6	16.6	23.6
1	0	0	0	1
2	0	0	2	0
3	0	1	0	0
Total	**0**	**1**	**0**	**0**

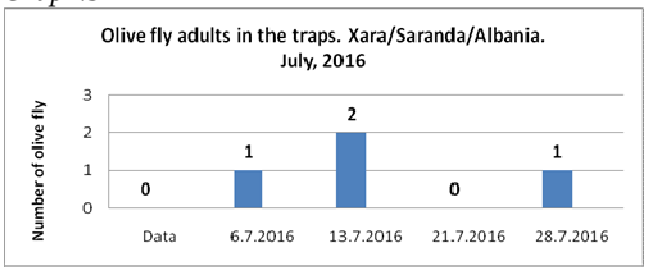


Graph.2

Tab.3

Number of control points with pheromones traps	Number of olive fly adults according to the monitoring days (July, 2016)			
	16.6	13.6	21.6	28.6
1	1	0	0	1
2	0	2	0	0
3	0	0	0	0
Total	**1**	**2**	**0**	**1**

Graph.3

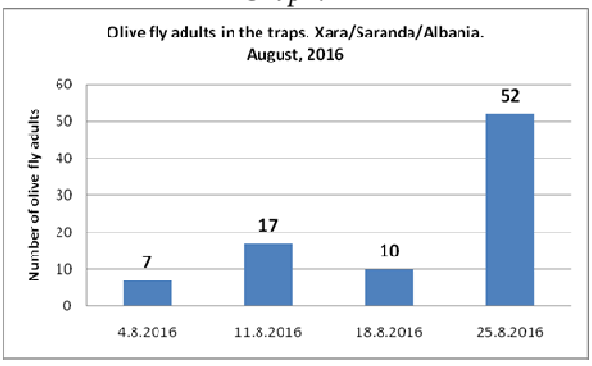


Tab.4

Curve of adults (B.olea) during August

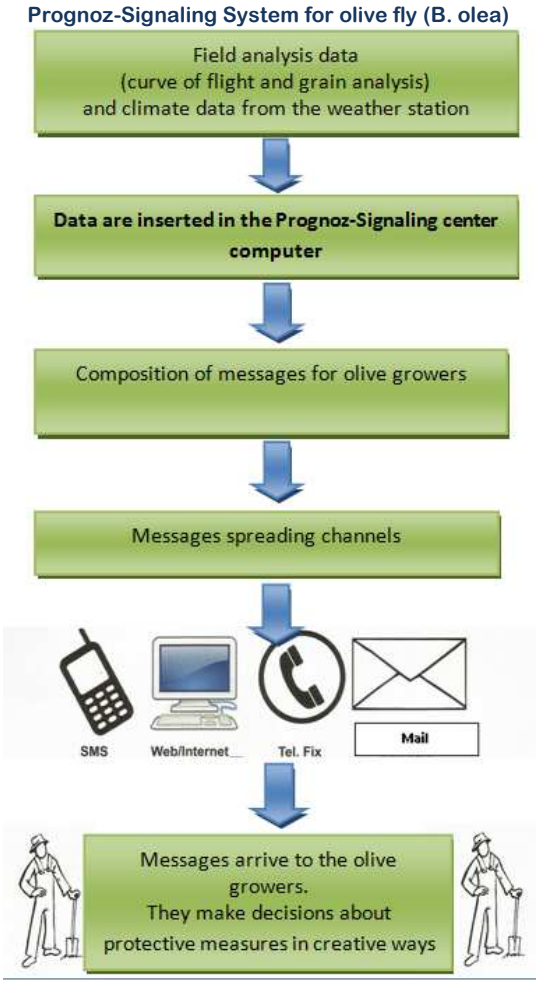
Traps number	Number of olive fly adults according to the monitoring days (August, 2016)			
	4.8	11.8	18.8	25.8
1	7	9	0	0
2	0	0	10	23
3	0	8	0	29

Graph. 4



IV. Discussion of Results and Recommendation

Monitoring of olive fly with Mcphail trap and with pheromone Dacus stick are very effective and help producers and advisory experts to see the dynamics of olive fly activity in the olive groves. During May, June, July the olive fly has a weak activity. During the second half of August the population of fly is increased very fast. Weather electronic data station has help in the preparation of messages for olive producers. When temperature is higher than 30 °C the activity of olive fly is limited and eggs and larvae have difficulties to develop. The curve of flight and the temperature have been a main tool for preparation of messages for producers. The messages have helped the farmers to take the right decision of control measures and for avoiding the unnecessary treatment with plant protection products. Based on the experience of the past two years in the Xara in Saranda district, a person was trained for monitoring of olive fly and using of weather station. The flow of information from field to the olive producers are presented in the schema below.



Scheme nr.1
System of monitoring and warning for plant protection in olive groves

Acknowledgment

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Authors' Profiles

Mendim Baçaj is a specialist in the plant protection field in the Agricultural Technology Transfer Center in Vlore, Albania since 2012. He was born in Vlore, on 09 March 1952. He graduated in the Higher Institute of Agriculture, Faculty of Agriculture in Plant Protection on 1975. After receiving his education, has attended several trainings in Mediterranean Plant Protection, Statistical analysis of field experiments etc. During past years he worked as agronomist in different villages in Vlore.

Enver Isufi is Executive director of Institute for Organic Agriculture, (IOA) Durres, Albania since 2001. He was born on 17 February 1952 in Albania. He graduated in the Agricultural University in 1975 as agronomist in plant protection. After receiving his education, has attended several trainings in Protection of olive seedlings produced in glasshouse, Advanced training for Plant protection, Protection of Mediterranean Fruit tree Crops etc. During past years he was a member in professional organizations like German Entomological Association, International Federation of Agricultural Journalists, ISOFAR and Balkan Organic Network. He is a *Coo founder* of the first association for organic agriculture in Albania, *Founder* of Association for organic agriculture “BIOADRIA” association, *Founder* of Institute for Organic Agriculture. He holds the scientific degree Prof.Ass.Dr since 2000.