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Population dynamics of Mediterranean fruit fly in mixed fruit orchards in Central Greece

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The Mediterranean fruit fly (medfly), *Ceratitis capitata* (Diptera: Tephritidae) is a notorious, invasive, and extremely polyphagous pest of the fruit industry worldwide. Medfly infests more than 350 different hosts, including stone fruits (peaches, nectarines, apricots, plums) and pome fruits (apples, pears, quinces). Monitoring population dynamics of this pest in areas at risk for economic damage is of paramount importance for designing and applying effective, profitable, integrated and environmentally sound management. In the frameworks of the Horizon 2020 funded project FF-IPM “In-silico boosted, pest prevention and off-season focused IPM against new and emerging fruit flies” we studied the phenology and seasonal biology of adult medflies in the coastal area of Lechonia, Central Pelion, Magnesia, Greece. The climate of the area is characterized by wet- warm summers, and rather warm temperate winters without freezing events and it is considered friendly for population development and growth of the Mediterranean fruit fly. A total of 22 Decis and 15 Jackson traps were established in three mixed fruit orchards in autumn 2019, and being serviced at weekly intervals until autumn 2021, with captured adults recorded and removed from the traps. Two of the orchards follow an organic management approach while the third one is conventionally managed. The pilot orchards were characterized by mixed cultivation (generally citrus, apples, peaches, plums, pears, figs, quinces and apricots), thus medfly’s hosts were perpetually available. Fruit samples were also collected from all potential hosts to estimate infestation rates during both seasons, as far as phenology and damage are concerned. The first adult captures were reported in both years in May. Peak capture rates were observed in July and October, respectively, while zero captures were recorded in January and February. The highest rates of fruit infestation were recorded in apricots, figs, peaches, and citrus (mandarins, oranges, bitter oranges). Overall, our data depict the details of the seasonal biology of medfly populations in areas with abundance of different hosts throughout the growing season. The results of our study are expected to set the stage for developing spatial adjusted, farm tailored decision-making models towards achieving sound Integrated Pest Management (IPM) to address medfly in mixed fruit orchards.