

Oral Presentation 24

Effect of host fruit and temperature on overwintering capacity of different *Ceratitis capitata* populations

Antonis G. Papadopoulos, Georgia D. Papadogiorgou, Cleopatra A. Moraiti, Panagiota M. Koskinioti and Nikos T. Papadopoulos

Laboratory of Entomology and Agricultural Zoology, School of Agricultural Sciences, Department of Agriculture Crop Production and Rural Environment, University of Thessaly, Fytokou St., 38446 N. Ionia Magnesia, Greece

The Mediterranean fruit fly (medfly), *Ceratitis capitata*, is one of the major economical pests globally, due to its extremely high invasion potential. Bitter oranges and apples are key overwintering hosts of medfly larvae in cooler, temperate areas. Despite the high number of studies on the development and survival of medfly in controlled laboratory conditions, there are only few using fruit hosts and none of them comparing the performance of different populations in overwintering hosts. In this study, we used five medfly populations from Zaton (Croatia), and Thessaloniki, Volos, Chios, Crete (Greece) to assess the survival and development of immature stages in the above two major overwintering hosts under constant and fluctuating temperature regimes in laboratory conditions. Artificially infested fruits (10 eggs/fruit) were kept at three constant temperatures (15°C-20°C-25°C) and five different thermocycles until pupation and adult emergence. Our findings demonstrate that pupation rate and the developmental duration of larvae and pupae were affected by all tested factors. Survival and developmental duration of immatures were higher and longer in apples compared to bitter oranges respectively. Nevertheless, only population was a significant predictor of the pupa-to-adult and egg-to-adult survival. Pupation rates were lower than emergence rates, indicating that once individuals reached the pupal stage, the probability to survive dramatically increases. The above results contribute towards understanding invasion dynamics of medfly and the biological traits that influence invasion success, with emphasis on range expansion to northern, more temperate areas of Europe.

Keywords: Tephritidae, Diptera, invasion, developmental duration, immature stages, host, temperature regime

The study was supported by the (a) FF-IPM Project (HORIZON 2020, GA818184), and (b) the Hellenic Foundation for Research and Innovation (H.F.R.I, MEDFLY, 4289)