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Evaluating potential olive orchard sugar food sources for the olive fly parasitoid *Psyttalia concolor*

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Abstract Olive fruit fly *Bactrocera oleae* (Rossi) (Diptera: Tephritidae) is a major olive pest in the Mediterranean basin where increasing insecticide resistance has enhanced damage and necessitates more reliance on other control strategies, such as biological control. Provision of floral resources has been reported to improve the effectiveness of natural enemies. Here, we tested the effect of six plant nectars and two honeydew sources on the survival of *Psyttalia concolor* (Szépligeti) (Hymenoptera: Braconidae), a parasitoid wasp used in the biological control of olive fruit fly. Our results showed a positive effect on survival associated with nectars of *Anchusa azurea* Mill., *Rosmarinus officinalis* L., *Lavatera cretica* L. and *Calamintha nepeta* (L.) Savi, while honeydew proved to be a valuable alternative food source. When offering flowers directly to insects, *Anchusa azurea*, *Lavatera cretica*, and *Foeniculum vulgare* L. were found to be the most beneficial species, indicating also that *P. concolor* feeds predominantly on shallow corollas.

Keywords Hymenoptera: *Braconidae* · Nectar · Honeydew · Survival · Conservation biological control

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Introduction

The olive fruit fly, *Bactrocera oleae* (Rossi) (Diptera: Tephritidae), is considered one of the most damaging olive pests in the Mediterranean basin (Tzanakakis 2003), and causes losses as high as 98 % of a harvest, resulting into average losses exceeding one billion dollars per year (Bueno and Jones 2002). The fly has

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