

PARASITIC FITNESS OF A STRAIN OF *DIACHASMIMORPHA LONGICAUDATA* REARED ON IRRADIATED LARVAE OF A VIENNA-8 STRAIN OF *CERATITIS CAPITATA*

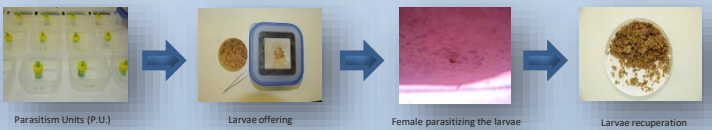
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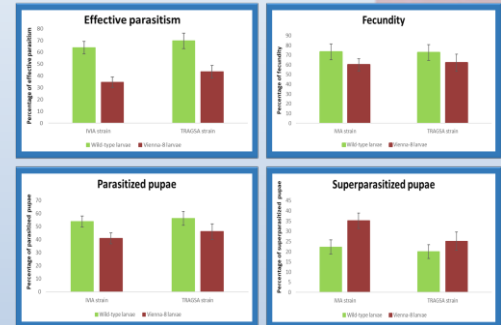
INTRODUCTION

Ceratitis capitata is one of the most relevant pests on fruit trees in Spain. In South and Central America, biological control against the medfly has been successfully developed in some countries. In order to study the possibility of implementing this type of control in the Valencian Community (Spanish eastern coast), the braconid wasp *Diachasmimorpha longicaudata* was imported from Mexico in 2006 and reared on wild-type larvae and lab conditions since then (IVIA strain). A mass rearing of this parasitoid using irradiated larvae of a Vienna-8 strain of the medfly was recently started by the company Grupo Tragsa for a pilot study to complement the use of the Sterile Insect Technique (SIT). The aim of this work is to determine the parasitic fitness of the TRAGSA strain compared to the IVIA strain.

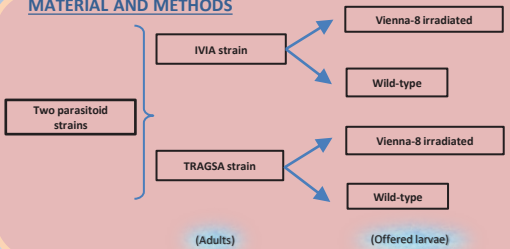


RESULTS

- Significant differences were not found in the parameters analysed between both parasitoids strains.
- Regarding the two types of larvae, significant differences were detected for the analysed fitness-related parameters of the adults. The Vienna-8 type significantly reduced three of the parameters in the two strains: percentage of effective parasitism ($F_{1,53}=29.97$ $p < 0.0001$), percentage of fecundity ($F_{1,53}= 5.42$ $p=0.0237$) and percentage of parasitized pupae ($F_{1,53}= 7.23$ $p=0.0096$). Conversely, they significantly increased the percentage of superparasitized pupae in both strains ($F_{1,53}= 5.57$ $p=0.0219$).



MATERIAL AND METHODS



Parasitism Unit (P.U.) = 15 third-instar larvae with artificial diet are offered to one *D. longicaudata* female for 24 hours during three days. Vienna-8 larvae are irradiated by 30 Gy using a Cobalt 60 source.

Experimental combinations

- IVIA strain – V-8 irradiated larvae → 5 P.U.
- IVIA strain – Wild-type larvae → 5 P.U.
- TRAGSA strain – V-8 irradiated larvae → 5 P.U.
- TRAGSA strain – Wild-type larvae → 5 P.U.

3 replicates

Fitness-related parameters

- Effective parasitism (adults emerged)
- Fecundity (egg laying)
- Parasitized pupae (1 egg/pupa)
- Superparasitized pupae (more than 1 egg/pupa)

CONCLUSIONS

Our results have shown that parasitoids from the TRAGSA strain have not lost parasitic fitness after 14 generations reared on irradiated Vienna-8 larvae, compared to the IVIA strain. Regarding the hosts, Vienna-8 larvae happened to affect the fitness-related parameters of both types of parasitoid. Nevertheless, the use of Vienna-8 larvae as hosts seems to remain compensated in a cost-benefit relation because of its utility in the SIT and parasitoid mass-rearing, linked to the fact that the efficiency in the field of the TRAGSA strain should be similar to wild parasitoids.

ACKNOWLEDGEMENTS

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