

Maternal age and duration of larval development affect the demographic characteristics of adult Mediterranean fruit flies

Antonis G. Papadopoulos, Stella A. Papanastasiou, Nikoleta K. Dionysopoulou and Nikos T. Papadopoulos

Laboratory of Entomology and Agricultural Zoology, Department of Agriculture Crop Production and Rural Environment, University of Thessaly, Volos, Greece

Introduction

Several factors (temperature, host fruit) affect larval development and the fitness traits of emerging adults in *Ceratitis capitata* (Diptera: Tephritidae). However, no information exists on whether the mother's age and the duration of larval developmental time affect the fitness of emerging adults. We assessed the effect of the age of the mothers from which we obtained eggs and the developmental duration of hatched larvae within host fruits (apples) on the demographic characteristics of the emerging adults.

Materials and Methods

Laboratory conditions: *C. capitata* mothers: 25±1°C, 65±5% R.H., L14:D10

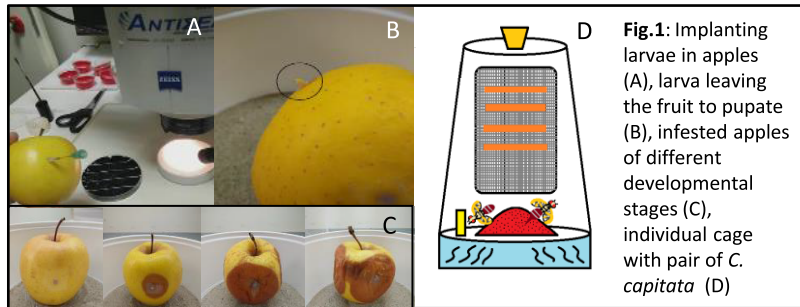
Apples implanted with *C. capitata* eggs: 18 ± 1°C, 50 ± 5% R.H., L14:D10

Flies used: Wild *C. capitata* population Mothers: F₂, Progeny: F₃

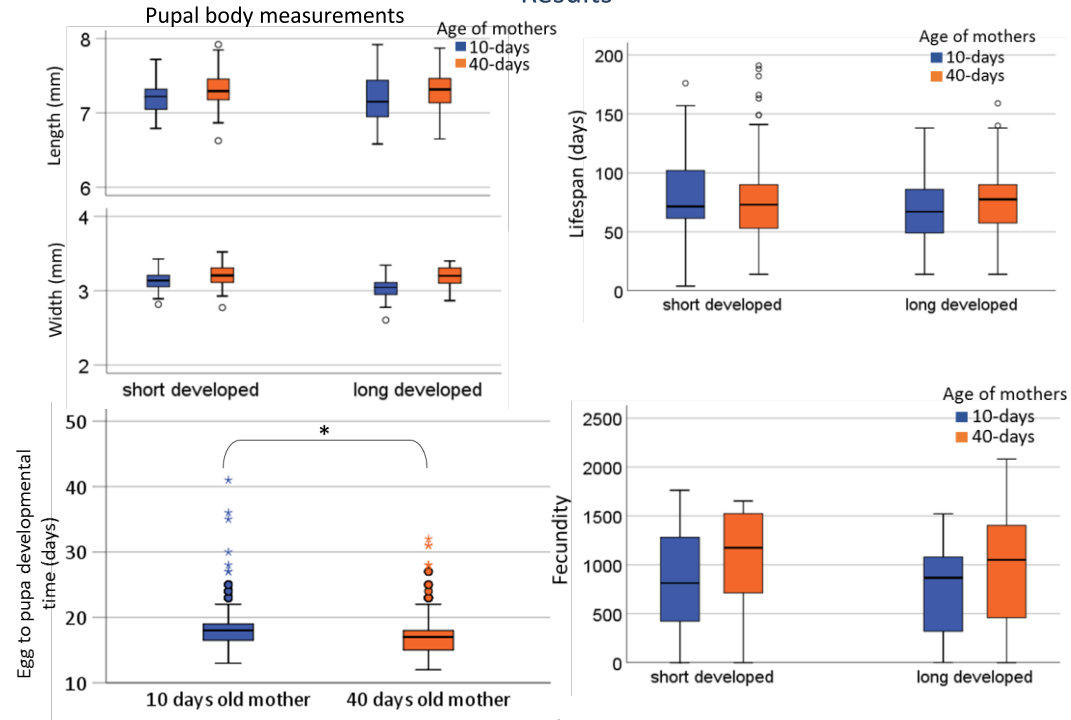
Host fruit: Apples - Golden Delicious cultivar

Procedures: Eggs of young and old females artificially implanted in apples (20 eggs/apple) (Fig. 1). Pupae sorted by larval developmental duration (short, long) and measured. Emerging adults (1 ♀ & 1 ♂) placed in individual cages. Four groups of medfly pairs were created: (i) 10-days mothers, short-developed larval stage (ii) 10-days mothers, long-developed larval stage (iii) 40-days mothers, short-developed larval stage (iv) 40-days mothers, long-developed larval stage

Observations: Adult mortality and female fecundity were recorded daily



Results



Conclusions

- ❖ Old females yielded larger offspring than young ones, regardless of the duration of larval development
- ❖ Immature developmental duration lasted longer for the offspring of young than for the offspring of old females
- ❖ Adult flies with short larval developmental duration lived longer than flies with long larval development
- ❖ No significant differences were observed on the longevity between progeny of old and young mothers.
- ❖ Neither the duration of larval development nor the mother's age affected the fecundity of female progeny.