

Reproductive development in
Orius laevigatus (Fieber)
a predatory bug of the Western Flower Thrips

Thesis

submitted to

the Faculty of Agricultural, food and environmental quality sciences

The Hebrew University of Jerusalem

for the degree of

“Master of science”

by

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March 2001

Rehovot, Israel

Summary

Releases of minute pirate bugs *Orius sp.* were initiated in Europe in the early 1990's for the biological control of the Western Flower Thrips (*Frankliniella occidentalis*) in greenhouse crops. Northern European and North American species of these bugs are known to enter diapause as mated females. The first trials in Israel for the control of thrips in greenhouse winter peppers using the indigenous species *Orius laevigatus* (Fieber) took place in 1996. Trials were performed to check whether diapause exists in this species, and if so, what factors induce it. The potential triggers of diapause that were tested included day length, temperature, combinations of day length and temperature, and various diets. The parameters measured in the trials were pre-oviposition period, number of eggs laid per female and the percent of ovipositing females (a parameter that actually indicates the non-diapausing females). Preliminary tests demonstrated no difference between the number of eggs laid in complete darkness or in continuous light, indicating that the predatory bugs do not need light for oviposition. Exposure to day-lengths of 8,10,12,14 and 16 hours at 25°C had no significant influence on the percentage of egg-laying females, which remained approximately 95%. As day length decreased, the length of the pre-ovipositional period increased from 4.7 to 7 days. This difference proved insignificant. When different combinations of day length (10, 14 hours) and temperature (15°C, 18°C, 22°C) were examined, day length and temperatures of 18°C and 22°C were found to have no significant influence on the percentage of females that entered diapause. When the temperature was increased from 18°C to 22°C with an accompanying increase in daylight hours, there was a significant shortening of the pre-ovipositional period from 28 to 7 days. When combinations of day length (10, 14 hours) and diet (pollen, spider mites, aphids, whiteflies, thrips and *Ephestia* eggs) were tested, these two factors were found to have a significant influence on the pre-ovipositional period, but not on the percentage of ovipositing females. The results of these trials indicate that the local species *Orius laevigatus* does not enter diapause under the prevailing conditions in greenhouses in Israel. The establishment of the predator in the field is slower under conditions of low temperatures, short day length, and on exclusive pollen diet. The main reason for slow establishment in the field is the prolonged pre-ovipositional period caused by this regime.