

BIOLOGICAL ATTRIBUTES AND LIFE TABLE PARAMETERS OF *Nephus includens* (Kirsch) (Coleoptera: Coccinellidae) AS A NATURAL ENEMY OF MARGARODID MEALYBUGS IN EGYPT.

Abdel-Salam, A. H.¹; A. A. Ghanim¹ and Hagar S. S. Awadalla²

¹Economic Entomology Department, Faculty of Agriculture, Mansoura University, Mansoura 35516, Egypt

²Plant Protection Research Institute, Agricultural Research Center, Ministry of Agriculture, Giza, Egypt

E-mail: adhabdelus@yahoo.com

ABSTRACT

Developmental time and rate of immature stages, growth index, survival percentage, longevity, fecundity, and life table parameters of *Nephus includens* (Kirsch) were investigated when reared on the three mealybug species namely, *Icerya purchasi*, *Icerya aegyptiaca*, and *Icerya seychellarum* at 28°C.

There was no significant variation in the incubation periods for *N. includens* when the predator was reared on the three tested preys. ANOVA showed that there were no significant differences in 1st, 2nd, 3rd, and 4th instars larvae when the predator was reared on the three tested preys. The total developmental time of immature stages was 26.3, 25.9, and 28.2 days on the three tested preys, with significant differences. Growth index of *N. includens* was 2.8517, 2.9069, and 2.4823 on the three tested preys, respectively. Developmental rates of the total immature stages were 0.0380, 0.0388, and 0.0355 on the three tested preys, with no significant difference. Results indicated that the survival percentages of immature stages when reared on *I. purchasi* and *I. aegyptiaca* were higher than on *I. seychellarum*.

There were no significant differences in pre-oviposition, oviposition, inter-oviposition, and total longevity periods among the three tested preys. Male longevity was 61.33, 63.83, and 53.17 days with no significant difference among the three tested preys. Fecundity of females was 94.17, 122.17, and 50.67 with significant differences among the three tested preys.

The mean generation time (T) was 41.66, 45.94, and 48.22 days, respectively when reared on the three tested preys. The population of this predator could be doubled every 76.30, 8.80, and 127.60 days on *I. purchasi*, *I. aegyptiaca*, and *I. seychellarum* at 28°C. The values of gross reproductive rate (GRR) were 69.82, 57.52, and 31.86. R_0 was 44.03, 31.94 and 13.73 when reared on the three tested preys. The intrinsic rate of increase (r_m) was 0.0091, 0.0788, and 0.0054 when reared on *I. purchasi*, *I. aegyptiaca*, and *I. seychellarum* at 28°C. The finite rate of increase (λ) was 1.0951, 1.0820, and 1.0558 on the three tested preys. The survivorship (L_x) for female age intervals was 64.0, 68.0, and 58.0 on the three tested preys, respectively.

Keywords: *Nephus includens*, biological attributes, life table, *Icerya purchasi*, *Icerya aegyptiaca*, *Icerya seychellarum*

INTRODUCTION

Several mealybug species are pests of citrus, fruit trees, ornamental plants and vine in Egypt. The cottony-cushion scale, *Icerya purchasi* Maskell, the egyptian fluted mealybug, *Icerya aegyptiaca* (Douglas), and the seychellarum mealybug, *Icerya seychellarum* (Westwood) are important pests