

Study of some biological aspects and development of integrated pest management program for the safflower fly, *Acanthiophilus helianthi* Rossi (Diptera: Tephritidae) in Iran

ABSTRACT

Acanthiophilus helianthi Rossi (Diptera: Tephritidae) is a pest of safflower and managing it because of its fecundity and concealed larval habitat is a challenge. Potential components of an integrated pest management program for *A. helianthi* were investigated at the Gachsaran Agricultural Research Station, in southern Iran from November 2008 to July 2009. For the life cycle studies, the infected flower heads were collected from an experimental field plot and were developed from egg to adult under laboratory conditions. The results showed that the first adults emerged gradually in mid April 2009. Female *A. helianthi* had a pre-oviposition period of 5.8 ± 1.0 days and the average fecundity was 27 ± 3.2 eggs. The eggs were laid in the bracts of flower heads singly or in clusters of 3-18. The Incubation period was 3.8 ± 0.6 days under field conditions and 3.4 ± 0.6 days under cage conditions. Three larval instars occurred, and the larval phase was 7-10 days. Males emerged earlier than females, but the longevity of the adult females (12 ± 3.0) was significantly greater than that of males (8 ± 1.0). Analysis of aggregated male and female sampling data showed that the gender ratio was 1:1.28. To evaluate the efficiency of different methods of fruit fly control on safflower, a field experiment was carried out. Five diverse methods, insecticides, baiting, cultural, Integrated Management and no treatment were assessed on weight of one thousand seeds, percentage of oil, percentage seed damage and harvest/ha. Integrated Management and insecticide control indicated best results with harvest potential of 1850 and 1723 kg/ha with a least damage of 5 and 8%, respectively. Since use of selective insecticides is one of the most important methods for pest management, the efficacy of six insecticides against *A. helianthi* infesting safflower were evaluated. Among the treatments Endosulfan 35% EC at 0.03% proved more effective followed by Chlorpyrifos and Monochrotophos.

Keyword: Efficacy; Insecticides; *Acanthiophilus helianthi*; Damage; Safflower; Integrated management