

Monitoring and Seasonal Abundances of the Leafhoppers; *Empoasca decipiens* (Paoli), *Empoasca decedens* (Paoli) and their Associated Predators on some Leguminous Vegetable Crops in Egypt

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ABSTRACT

The present study was conducted to survey leafhopper species and their associated predators on some leguminous crops; broad-bean, pea, cowpea and bean plants at Diarb-Nigm district, Sharkia Governorate, Egypt during 2006/07 and 2007/08 seasons. Also, to study the effects of some climatic factors on the population densities of dominant leafhopper and their predatory species. Leafhopper species; *Empoasca decipiens* (Paoli), *E. decedens* (Paoli) and *Cicadulina chinai* (Ghau) were recorded. Sampling was conducted using insect sweeping net. Results indicated that *E. decipiens* had one peak occurred on broad-bean plants in 3rd week of February and 1st of March in the two seasons, respectively. However, two peaks occurred on pea plants in 3rd weeks of January and February 2007/08. Two peaks occurred on bean plants in 1st weeks of July and August, 2007 and in 3rd weeks of July and August, 2008. Two peaks occurred on cowpea plants in 1st weeks of July and August, 2007 and one peak in 3rd week of July, 2008. Population density of *E. decedens* showed two peaks occurred on broad bean and pea plants in 3rd weeks of February and March, 2006/07 and also, two peaks on pea plants in 1st weeks of February and March, 2007/08. Two peaks occurred on bean plants in 1st week of July and 3rd week of August in the two seasons, respectively. Two peaks occurred on cowpea plants in 3rd weeks of July and August 2008. Obtained results indicated that five predatory species, *Coccinella undecimpunctata* L., *Chrysoperla carnea* (Steph), *Paederus alfieri* (Koch.), *Metasyrphus corollae* F. and *Scymnus* sp. were found associated with those leafhoppers. *C. undecimpunctata* and *Ch. Carnea* were the most dominant species. Temperature and relative humidity had significant effects on the population densities of both the leaf hoppers and their predators in the all studied crops.

Key words: Leafhoppers, *Empoasca decipiens*, *Empoasca decedens*, leguminous crops, predators, Egypt.

INTRODUCTION

Leguminous vegetable plants; cowpea, bean, broad-bean and pea plants are considered the most important plants because of their high nutritive values as human food. Cultivated area increased to cover the needs of people and the requirement of local and foreign markets (Ahmed, 2007). Leafhopper insects cause serious damage to leguminous plants, either directly by sucking plant juice or indirectly as vectors of virus diseases; Hegab *et al.*, (1987), El-Gindy (1997), Abdel-Samed (2005) and Ahmed (2007). Predatory species recorded associated with leafhopper species infesting leguminous vegetable plants included, *Paederus fuscipes* (Zhu, 1984); *Orius insidiosus*, *Chilocorus cati* and *Cycloneda sanguinea* (Cotte and Cruz 1989).

The scope of the present study was directed towards the following:

- 1- Survey and seasonal abundances of the leafhopper species and their associated predators on some leguminous vegetable crops; cowpea, bean, broad-bean and pea in Egypt,
- 2- Effect of temperature and relative humidity on population densities of the leafhoppers and their associated predators in the studied leguminous vegetable crops.

MATERIALS AND METHODS

Four leguminous crops; cowpea, bean, broad bean

and pea were planted in an area of about 1/2 feddan (= 2100 m²) at Diarb-Nigm district, Sharkia Governorate, Egypt for two growing seasons 2006/07 and 2007/08. Experimental area was divided into two plots in winter (for broad bean and pea) and in summer (for cowpea and bean). All regular cultural practices were carried out and no chemical control was applied. Sampling took place weekly by using an insect sweeping net (fifty double-net strokes/sample/date) from each plot. Collected insects were placed in plastic bags, anesthetized with diethyl ether and transferred to the laboratory for classification, counting and recording. Daily degrees of temperature and relative humidity were obtained from the Agricultural Meteorological station at Sharkia Governorate and estimated as biweekly means. Correlation coefficients between the number of predaceous insects and the leafhoppers were statistically calculated. Costat Software Program (1990) was applied for statistical analysis of results.

RESULTS AND DISCUSSION

1- Survey of leafhoppers and their associated predators on leguminous vegetable plants

Three leafhopper species; *Empoasca decipiens* (Paoli), *E. decedens* (Paoli) and *Cicadulina chinai* (Ghau) (Homoptera: Cicadellidae) were recorded during the present study, on the four leguminous vegetable crops; broad bean, pea, cowpea and bean. *E. decipiens* and *E. decedens* were the most dominant