

CONTENTS

N0.	Title	Page
I	INTRODUCTION	1
II	REVIEW OF LITRATURE	3
1	Survey of insect pests infesting Chicory plants and their natural enemies.	3
2	Population density of the most important insect pests and their predators associated with Chicory plants.	14
3	Effect of weather factors and natural enemies on the population density of insect pests infesting <i>C.intybus</i>.	20
4	Effect of aphids infestation on chemical components of <i>C. intybus</i> plant.	22
5	Effect of some treatments against whitefly <i>B. tabaci</i>.	23
III	MATERIALS AND METHODS	28
3.1	Survey studies	28
3.2	Studying the weekly variation in population density of insect pests infesting chicory plants and their predators	29
3.3	Studying the relation between some weather factors and the population density of the main insects and predators	30
3.4	Effect of Aphids infestation on some phytochemical component	30
3.5	Evaluating the efficiency of five teratments to control the white fly <i>B. tabaci</i> (<i>Gnn.</i>) in the field	31
IV	RESULTS AND DISSCUSSION	33
1	Survey of insect pests and associated predators	33

1.1	Pests and their predators occurred on <i>Cichorium intybus</i> L.	33
2	Population fluctuation of certain insect pests infesting <i>Cichorium intybus</i> L. in fields free of weeds at Al-Qalubia Governorate	39
3	Population fluctuation of certain insect pests infesting <i>Cichorium intybus</i> L., in weeded fields at Al- Qalubia Governorate.	41
4	Population fluctuation of certain insect pests infesting <i>Cichorium intybus</i> L., in fields cultivated with (<i>Trifolium Alexandrinum</i> L.) at Al- Qalubia Governorate	69
5	Population fluctuation of certain natural enemies (predators) associated with pests infesting <i>Cichorium intybus</i> L. at Al- Qalubia Governorate.	78
6	Effect of some ecological factors on population dynamics of certain pests infesting <i>Cichorium intybus</i> in field free of weed at Al-Qalubia governorate .	84
7	Effect of some ecological factors on population dynamics of certain pests infesting <i>Cichorium intybus</i> in weeded fields at Al-Qalubia governorate.	95
8	Effect of aphid infestation on chemical components of <i>C. intybus</i> plant.	106
9	Effect of five treatments for control <i>B. tabaci</i> infesting <i>Cichorium intybus</i> by seven spray sequences after ten days interval	110
	SUMMARY	115
	REFERENCES	122
	ARABIC SUMMARY	-

SUMMARY

In Egypt, chicory *Cichorium intybus L.* is one of the plant specie in genus *Cichorium* (Family : Asteraceae) which Known as a bushy perennial herb with blue or lavender flowers. It is infested with many insect pests specially, the sucking insects during the growing season which cause considerable damage to the crop under Egyptian conditions. The present study was conducted during 2009/2010 & 2010/2011 seasons on chicory plant in Qalubia governorate to survey the insect pests and their predators harboring the plant. The population fluctuation of the most important pests and their relation to the abiotic factors (Means of the temperatures rang, mean of wind velocity & mean of relative humidity), as well as their associated predators. In addition, the affect of Aphids on compounds of plant. Also the efficiency of some plant extracts, bio-compounds and oils against *Bemisia tabaci* and the effect of some agricultural practices at Qalubia governorate was studied. Results could be summarized as follow:

1. Survey of pests and associated predators:

Survey of pests and associated predators occurred on chicory, and their abundance was carried out throughout two successive years (seasons) 2009/2010 and 2010 /2011 at Qalubia governorate.

Twelve insect pests and five associated predators related to 13 families from six orders were recorded.

Orders : Coleoptera – Diptera – Hemiptera – Lepidoptera – Neuroptera – Thysanoptera .

Families :- Agromyzidae – Anthomyidae – Aleyrodidae – Anthocoridae - Aphididae -- Coccinellidae - Cicadellidae – Chrysopidae - - Noctuidae - Pentatomidae – pseudococcidae - Syrphidae - Thripidae .

Predators: *Coccinella undecimpunctata*.Rcichc; *Cydonia vicina var isis*. Cr; *Syrphus corollae* Fabricius; *Orius albidipennis* (Rut.) and *Chysoperla curnea* Stephens;

Insects: *Liriomyza congasta*; (Becker) *Pegomia mixta* (Witt.); *Bemisia tabaci* (Genn.); *Aphis craccivora* Koch; *Aphis gossypii*(Glover); *Myzus persicae* (Sulzer); *Empoasca spp*; *Nezara viridula*; *Planococcus sacchara* (Cockerell); *Agrotis ipsilon* (H.); *Spodoptera littoralis* (Boisd.) and *Thrips tabaci* Lind.

2.1. Population fluctuation of certain pests infesting

***Cichorium intybus* L., plant:**

According the annual mean number of the tested four sap sucking insects, white fly, leafhopper, aphis and leaf miner white fly *B. tabaci* was the most abundance and they were significantly higher in the second year than the first one in Qalubia governorate.

1-*Bemisia tabaci*

This pest had the highest population through the two tested seasons recording 278.5, 405.9 indiv. As a total number during the two seasons, with general mean 9.3 and 13.5 indiv . /

5 leaves. 4 peaks were recorded 49.3, 12.9 ,5.6 , and 7.6 indiv. /5 leaves in the first tested year and 53.3, 17.3, 8.9, 8.3 and 14.6 indiv./5 leaves during the second tested season.

2- *Empoasca spp*

The population recorded six peaks during first season the highest was 9.3 indiv. (15 /5 / 2010) and six the lowest was 1.3 (13 /2 / 2010). While during the second season the population density of this species recorded high peak 10.6 /5 leaves occurred 21 /5 / 2011 Total mean number of 83.7 and 114.6 individuals respectively, and general mean of infestation 2.79 and 3.82 insects /5 leaves.

3-*Thrips tabaci*:

The first season, 7 peaks were recorded the highest of them was 15.3 and the lowest was 2.3 insects 15 leaves. While during the second season the population fluctuation of this species recorded 9 peaks. The highest peak recorded 17.6 individuals / 5 leaves on 5 /3/2011 the smallest peak presented 2.3 individuals / 5 leaves on 8 /1 /2011. The total number of insects infested chicory plants was 177.5, 165.1 with mean number 3.9 and 5.5 insects /5 leaves during the first and second tested seasons, respectively..

4-*Aphis gossypii*:

Five peaks were recorded during the first season, the highest peak 19.3 aphids was recorded on 10/4/ 2010,the

smallest one was 4.3 aphids .Total number infested plants was 200.1 with mean 6.67 /5 leaves.

In the second season, the population fluctuation in this season had 7 peaks, the highest was 21.6 and the lowest was 1.3 aphids /5 leaves. Chicriom plants reserved 238.7 insects all over the growing season with a mean number 7.95 plants /5 leaves.

5- Liriomyza congesta

In the first season, *L. congesta* recorded 6 peaks the highest was 11.3 and the lowest was 2.6 larvae /5 leave. With a total number 74.8 and a general mean of infestation 2.49 larvae /5 leave.

During the second season, this pest recorded 7 peaks of activity the biggest was 13.6 and the smallest 1.3 with total number 107.6 and general mean of infestation lasted to 3.58 larvae /5 leaves.

Cichorium intybus L., plant weeded in field:

The population fluctuation of this pest, white fly, leafhopper; aphid, leaf miner and cutworm they were significantly high in the second season than the first at Qalubia governorate. According the general mean number of the tested lowest with *Cichorium intybus L.*, plant weeded in field during two seasons.

Bemisia tabaci: (405.9 and 278.5 individual /5 leaves)

Empoasca spp:(83.7 and 114.6 individual /5 leaves)

Thrips tabaci: (117.5 and 165.1 individual /5 leaves)

Aphis gossypii (200.1 and 238.7 individual /5 leaves)

Liriomyza congesta (74.8 and 107.6 individual /5 leaves)

Aphis carccivora (32.0 and 16.0 individual /5 leaves)

Myzus persicae (24.0 and 20 individual /5 leaves)

Nezara viridula (8.0 and 8.0 individual /5 leaves)

Spodoptera littoralis (6.0 and 4.0 individual /5 leaves)

2.2. Effect of aphid infestation on chemical components of *C. intybus* plant:

The *Cichorium intybus* leaves content resulted from aphid infestation Compared with uninfested plants. The relationship between the concentration of Magnesium (PPM) in infested leaves gave the highest reduction when compare with uninfested leaves by aphids being (48-95 %). Followed by the reduction of main minerals P&K. The reduction caused by aphid infestation as the percentages of Protein, Humidity and reduced Sugar was 39.26, 34.32 and 32.19, respectively. On the other hand, Magnesium achieved the lowest reduction (3.92%) resulted with aphid infestation. While, the remaining leaves components such as % Carbohydrate, % Phosphorus, % Total sugar and % Potassium evaluate the moderate reduction (24.70, 22.92 , 22.41 and 19.71) respectively.

2.3. Effect of five treatments for control *B. tabaci* infesting *Cichorium intybus* by seven spray sequences after ten days interval:-

***Bemisia tabaci* Eggs**

The Agril cover and aqueous solution of Zanzalakht treatments gave satisfactory results against whitefly eggs population on chicory plants season comparing with other treatments.

***Bemisia tabaci* nymphs:**

In general, the Agril cover treatment had satisfactory effects against *Bemisia tabaci* nymphs population in the studied season comparing with other treatments