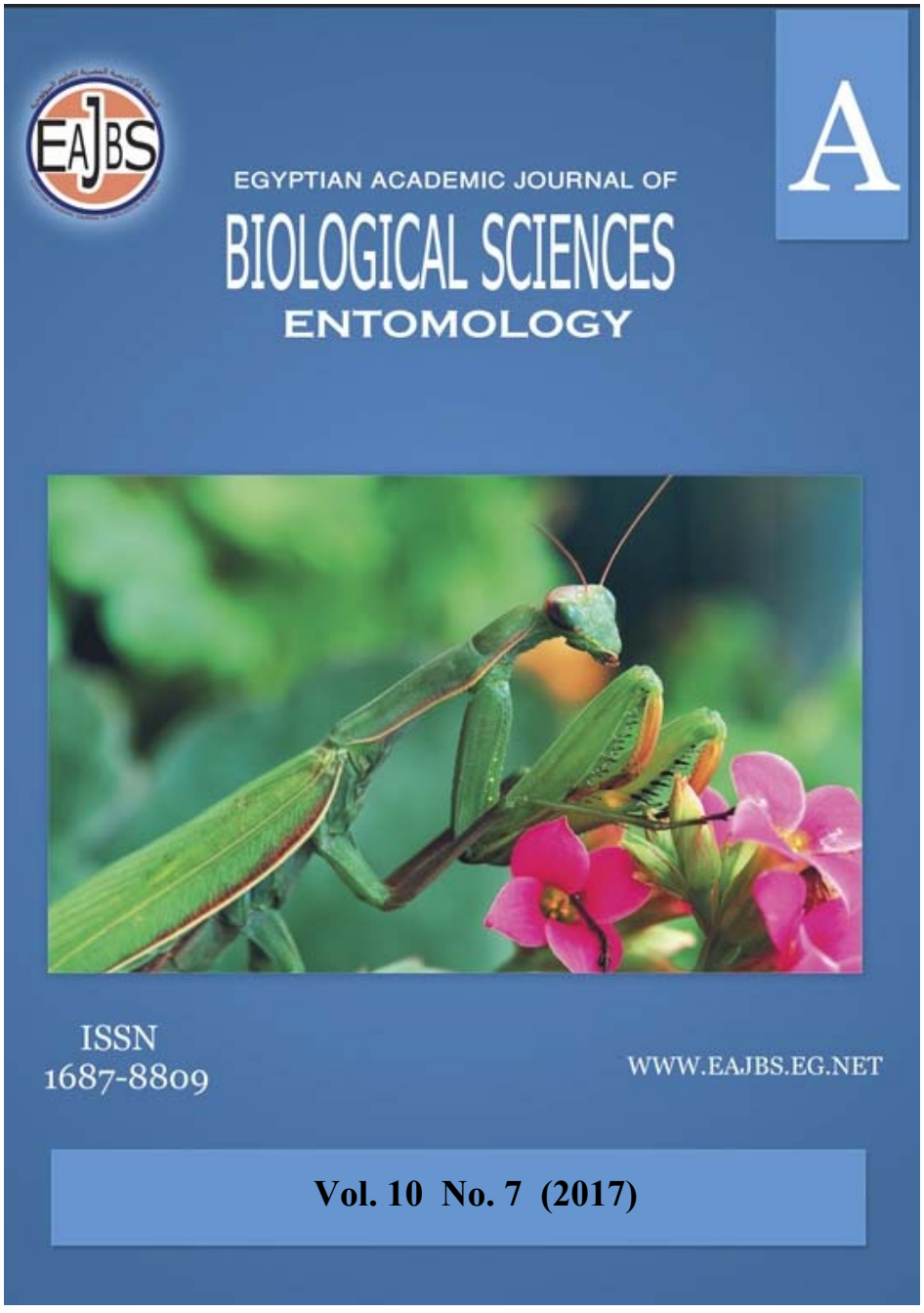

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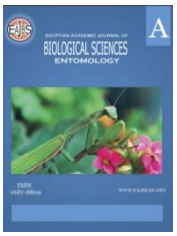

Seasonal Abundance of Certain Piercing Sucking Pests on Cucumber plants In Egypt.

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ABSTRACT

Experiments were carried out at Diarb Negim district, Sharkia Governorate to study certain piercing sucking pests infestation and their associated predators on cucumber plants during two successive seasons 2014-2015 and 2015-2016 . The dominant insect pests were cotton aphid, *Aphis gossypii* Glover, whitefly, *Bemisia tabaci* (Genn.), *Thrips tabaci* (Lindquist) and a few numbers of Jassid as well as *Nezara viridula* F. Whereas, the prevailing associated predators were *Orius* spp., *Metasyrphus corollae* F., *Chrysoperla carnea* (Steph.), *Coccinella undecimpunctata* L. and a few number of *Paederus alfierii* (Koch) and true spiders. The infestation with *A. gossypii* and *B. tabaci* were much higher in autumn plantations than in summer plantations in both seasons of study, while, *T. tabaci* could be detected in few number on cucumber plants during autumn plantation in both seasons. In autumn plantation, *Orius* spp. had two peaks of activity in both years. The two peaks were recorded on the 1st and the 3rd November (17 and 23 individuals/30 leaves, resp.) in 2014 season and (9 and 12 individuals/30 leaves) in 2015 season. In the same regards, during summer plantation, *Orius* spp. had two peaks of activity on the 2nd of May and the 1st of June (48 and 31 individuals/30 leaves) in2015 season. Also, *Metasyrphus corollae* had two peaks of activity on 4th of April and 1stof May (3 and 17 individuals/30 leaves. *Chrysoperla carnea* had two peaks of activity on 2nd and 4th of May (3 and 15 individuals/30 leaves).Statistical analysis showed that temperature and relative humidity were significant with some insects and insignificant with the others.

INTRODUCTION

Cucumber is considered as a very important vegetable crop .Therefore , this crop was chosen as an experimental crop in this investigation .It is well known that the piercing sucking insects cause yield losses in vegetable crops as well as other crops (Attia and El-Hamaky, 1985 ;Higgins, 1992 and El-Khouly *et al* ., 1998). Among these insect pests, certain Homoptera such as aphids and white flies, Thysanoptera such

as thrips have great economic importance which cause serious damage either directly by sucking plant juice or indirectly as vectors of plant pathogenic viruses. (Abdelsalam *et al* .,1988 ;Yokomi *et al* . ,1990 ; Ali, 1996 and El-Lakwah, 2011). Today, biological control is an increasingly important component of integrated pest management (IPM) program for agriculture as well as for urban environment. Therefore, the mass production techniques of some predators may be relatively help in solving the problems of insect pests on cucumber and environment in the world and Egypt (Albert, 1995 and Jin *et al.,* 2014).

Therefore, the objective of the current study was to:

1-Survey of certain piercing – sucking pests and their associated predators infesting cucumber plants.

2-Study the effect of certain weather factors on the seasonal abundance of these pests and their associated predators.

MATERIALS AND METHODS

The present investigation was carried out at fields of (Diarb Negim) district Sharkia Governorate during 2014/2015 and 2015/2016 season

Survey and population density of piercing sucking pests and their predators on cucumber plants:

Surveying of major piercing sucking pests and their predators took place during two successive growing seasons 2014 - 2015 and 2015- 2016 on cucumber (summer and autumn) plantations. The cultivated area was half feddan in both seasons 2014 and 2015. The sowing date was in the 4th of October in the first season, while it was 10th of October in the second one. Sampling started after about two weeks from planting and continued to the harvesting time, the sample size was 30 leaves from 10 cucumber plants and chosed randomly from plants early in morning before the whitefly adults tend to be more active. Direct count of adults of injurious insects and predators on cucumber plant was undertaken. Since the natural enemies under investigation differed in their living habits, activities, and distributions on the host plants infested with different prey and host insects it was necessary to use one sampling method for all groups such as leaves sampling plant method in order to explain the relationship between pests and their associated predators. Samples of 30 leaves of cucumber were weekly in some few cases, picked up randomly and placed in paper bags to be examined carefully under microscope. The number of insect pests and predators (immature stages and adults) in most cases were directly counted.

Study the effect of certain weather factors on the population density of the piercing sucking pests and their predator on cucumber:

To study the effect of certain weather conditions on the population density of the pests and their associated predators daily minimum, maximum, mean temperature and mean relative humidity were obtained from the Meteorological station, at Zagazig region. The correlation coefficient between weather parameters and the number of pests and their associated predators were studied. Also, the numerical relation among these variables was calculated for the key weather factors, using regression coefficient (Fisher 1950).

RESULTS AND DISSCUSSION

Seasonal abundance of the insect pests infesting cucumber plants:

The seasonal abundance of the dominant insect pests infesting cucumber plants were Aphids (*A. gossypii*), whiteflies (*Bemisia tabaci*), thrips (*Thrips tabaci*) and few of jassids *and Nezara virdula* F. were studied.

Autumn plantation season:

a)Aphid *A.gossypii* (Glover), the obtained data in Fig.(1) showed the mean population density of *A. gossypii* on cucumber plants in 2014. Infestation was stated at the last week of October (0.83 individuals / leaf) and gradually increased as the growing season progressed to reach its maximum (51.01 aphids / leaf) at the last week of November 2014 .In 2015 season, the infestation of *A. gossypii* was stated on 28th October (0.17 aphids/ leaf) and increased sharply to reach its maximum (66.85 individuals/ leaf) at the last week of November (Fig. 2).

Meanwhile, the data indicated that the population of adults and immature stages of *A. gossypii* on the cucumber plants was higher on young plants than on older ones. These results were in agreement with Hanafy (2004) and El- Lakwah *et al*. 2011, who mentioned that the infestation of *A. gossypii* was stated at the 15th day of sowing (81and 51 adults / 30 leaves), then it increased sharply to reach its maximum (600 and 600 adults /30leaves) at the 43rd day after sowing for Hageen eshrak and Amira cultivars, respectively.

b)Whitfly, *Bemisia tabaci* , the data illustrated in Fig(1) showed that the leaves infested with *B. tabaci* population appeared at the 15th day after sowing on 23rd October (11.30 individuals / leaf) at 23.49°C and 56.28% R.H and then it increased gradually to reach its maximum (92.2 individuals / leaf) at the last week of November 2014, at 17.33°C and 63.77 R.H%. Two peaks of infestation were obtained on November 6 and last week of November (69.17 and 92.2 individuals/ leaf),respectively. The corresponding calculated average temperature and relative humidity during this period were 21°C and 51.0 R.H% and 17.33°C and 63.77 RH% in 2014 season respectively .

In 2015 season, the whitefly began to appear on 28th October (12.3 individuals/ leaf) and its population gradually increased to reach the maximum (69.2 individuals /leaf) at 18.42°Cand 63.2 R.H% these results were in agreement with Adam *et al.,* (1997) and El- LAkwah *et al.*,(2011) who found that the population of *B. tabaci* occurred on cucumber in autumn was higher than that found in spring season.

c)Thrips, *Thrips tabaci*, results given in Fig (1 and 2) cleared that no thrips individuals could be detected on cucumber during autumn plantation of 2014 and 2015. Similar results were given by **Ali (1996)** who mentioned that cucumber plants infested by few numbers of thrips during autumn plantation of 1991.

Summer plantation season:

a)Aphid *(A.gossypii*),the obtained data are illustrated in (Fig. 3), the general mean population density of *A. gossypii* on cucumber plants. Infestation was stated on 16th April (9.6 individuals /leaf) at 16.30°C and 62.57 R.H%. Three peaks of infestation were obtained on 30th April , 21st May and 4th June (25.3, 7.0 and 10.73 individuals/ leaf), respectively. The corresponding calculated average temperature and relative humidity during this period were 18.71°C , 61.71 R.H%; 25.63°C, 58.43 R.H% and 24.56°C, 65.43 R.H, respectively, in the First season 2015.

In 2016 season, infestation of *A. gossypii* were stated on April 22(18.72 individuals/ leaf) at 20.72°C and 66.71 R.H%. It was decreased to reach its minimum (4.03 individuals/ leaf) on June 3 at 27.96°C and 52.0 R.H% . Two peaks of activity were (12.91 and 6.83 individuals / leaf) at the second week of May and the last week of May (21.61 °C and 50.29 R.H% and 24.47°C and 55.0 R.H%) respectively (Fig.4).

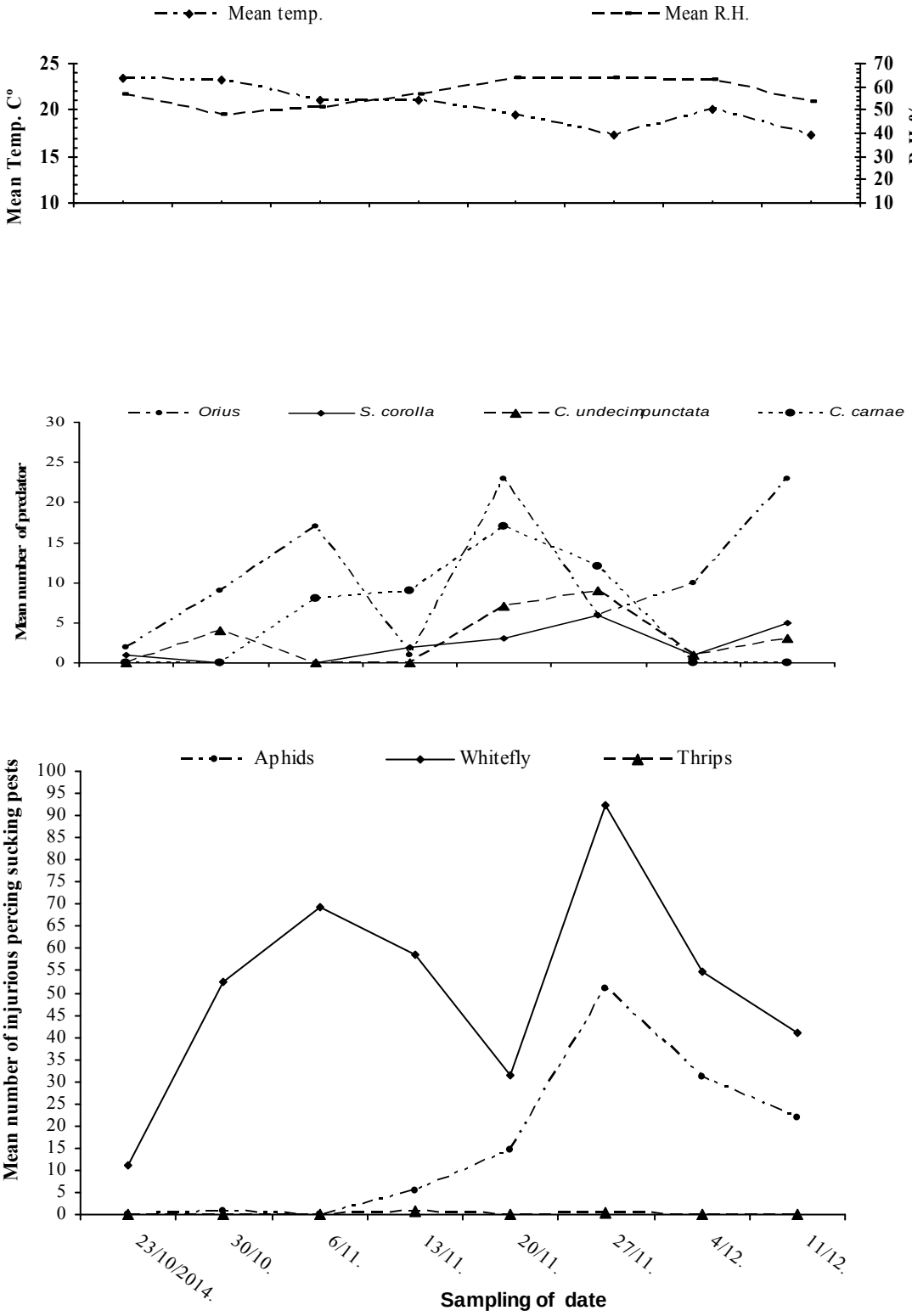

Fig. (1): Seasonal abundances of certain insects and their associated predators on cucumber plants in autumn plantation season of 2014 at Diarb- Nigm district, sharkia Governorate.

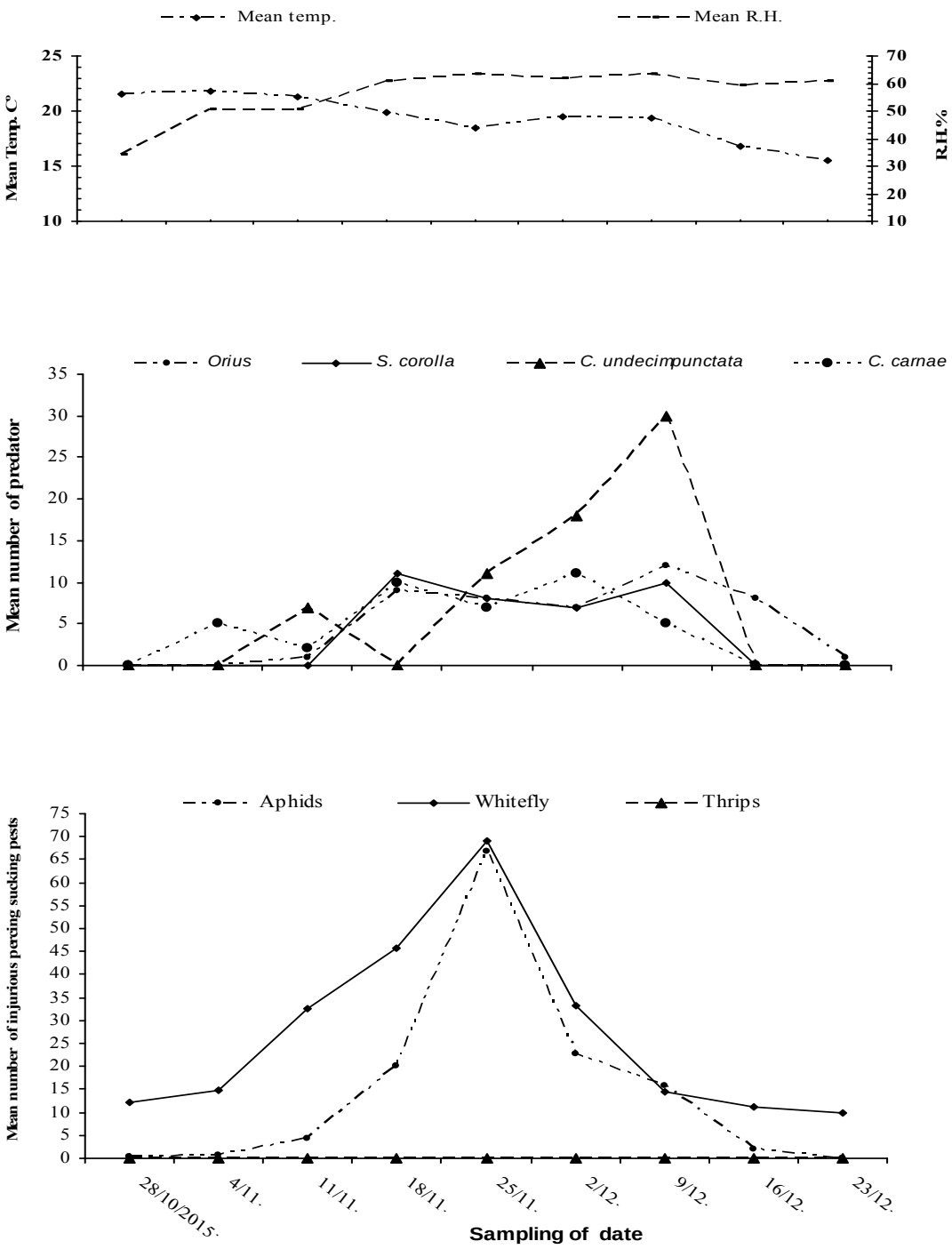

Fig. (2) :Seasonal abundances of certain insects and their associated predators on cucumber plants in autumn plantation season of 2015 at Diarb - Nigm district, sharkia Governorate.

According to Attia and El-Hamaky (1985) and El-Lakwah *et al.* (2011) *A. gossypii* was the most injurious insect pests to cucumber, snake cucumber and vegetable marrow. The infestation with *A.gossypii* to cucumber was heavy during the summer plantation rather than late summer plantation. Similar result were given by **Ahmed (1994)** in Egypt, investigated the susceptibility of six cucumber cultivars to infestation by certain insect pests including the chemical analysis of the leaves. He showed higher total protein and amion acid contents for the most susceptible cultivar.

***b)Bemisia tabaci*,** in first season 2015, whitefly began to appear on April 16 (5.1 individuals/ leaf) at 16.3°C and 62.57 R.H% and its population increased to reach the maximum (18.91 individuals/ leaf)in the third week of May at 25.63°C and 58.43 R.H% (Fig. 3).

In this study; whitefly began to appear on April 22 (0.67 individuals /leaf) at 20.72°C and 66.71 R.H% and its population increased to reach the maximum (9.95 individuals/leaf) at 27.96°C and 52.0 R.H%. Two peaks of infestation were obtained on last week of April and first week of June (1.87 and 9.95 individuals/leaf) respectively. The corresponding calculated average temperature and relative humidity during this period were 22.96°C , 66.71 R.H% and 27.96°C and 52.0 R.H% in second season 2016 (Fig. 4).

Similar result were obtained by **Gerling and Horowitz (1984)** who pointed out that most movement of *B. tabaci* within a crop was at a low level to locate fresh leaves for oviposition. When the crop was harvested , large number of adults would leave the plant ;flew upwards and be carried by the wind to colonise new sit downwind from the original infestation.

c)Thrips tabaci, data in (Fig.3) the mean weekly population *T.tabaci:* infesting cucumber during 2015. The thrips began to appear on third week of April (3.0 individuals/ leaf) at 16.30°C and 62.57 R.H% and its population gradually increased to reach the maximum (18.0 individuals/ leaf) at 25.63°C and 59.43 R.H% during 2015.

In 2016 season, thrips began to appear early on the last week of April at 20.72°C and 66.71 R.H% (4.55 individuals/ leaf). Its population increased to reach the maximum 16.92 individuals/ leaf in the second week of May at 21.61°C and 50.29 R.H% (Fig. 4). However, Habashi *et al.*(2007) showed that the population density of thrips on the untreated plants had two active periods; the first extended from April 4th until May 2nd with a peak of 1026 individual\40 leaves on April 25th , while the second period extended until May 23rd with a peak of 94 individual\ 40 leaves on May 16th ,2005.

Seasonal abundance of predators associated with pests infesting cucumber at Diarb Neigm district.

Catches of predatory species revealed the following species: *Orius* spp., *Metasyrphus corollae, Coccinella undecimpuncatata, Chrysoperla carenea* and few numbers of *Paederus alfierii* and true spiders cucumber.

Autumn plantation.

***a)Orius* spp.**in the autumn season of 2014, as seen in (Fig.1), initial number of anthocorids associated with cucumber with few numbers in October 23 (2 individuals/ 30 leave). Two peaks of activity could be detected in November 6 and November 20 (17 and 23 individuals/ 30 leaves). Average temperature and relative humidity during this period were 21°C and 51.56 R.H% and 19.42°C, 63.85 R.H% respectively.

In 2015 Season, as showen in (Fig.2) the occurrence of anthocorids (*Orius* spp.*)* took place with only one individual on second week of November.
Few numbers were recorded, two peaks of activity could be detected with a few number (9 individuals/ 30 leaves) in 3rd week of November and (12 individuals/ 30 leaves) 2nd week of December.
However, Bulut and Gocmen (2000) in France Found that *Asaphs vulgaris , Aphelinus* sp., *Aphidoleles aphidimiza* and *C. carnea* as natural enemies of aphids. *Orius minutus,O. nieger* and *Macrolophus caliginosus* were found as predators of thrips . on grown tomato, pepper, and cucumber.

b)Metasyrphus corollae, numbers of *Metasyrphus corollae* associated with cucumber plant during 2014 season are tabulated in (Fig.1). initial number were stated on October 23 (one individuals/ 30 leaves) and gradually increased to reach the maximum (6 individuals/ 30 leaves) at 17.33°C and 63.77 R.H%. In 2015 Season, the occurrence of *Orius spp*. took place with 11 individuals/ 30 leaves and decreased to reach the minimum 7 individuals in December 2 at 19.5°C and 62.R.H%(Fig.2).
However, El-Sayed and Abo-El-Ghar (1992) in Egypt , observed that predators , *C. carnea , C. septempunctata* and *Syrphus* spp. were associated with pests infesting cucumber.

c)Coccinella undecimpunctata**,** In 2014 Season the *C. undecimpunctata* began to appear on cucumber plant at low density during last week of October (4 individuals/ 30 leaves) and its increased to reach their maximum in last week of November (9 individuals/ 30 leaves) at 17.33°C and 63.77R.H (Fig.1).
Meanwhile, *C. undecimpunctata* began to appear in second week of November (7 individuals/ 30 leaves) and increased to reach their maximum in second week of December (30 individuals/ leaves) at 19.4°C 63.14 RH% (Fig.2).
***d)Chyrsoperla carnae*:**The obtained data are summarized in (Fig.1).In 2014 season, *C.carnea* began to appear on cucumber on November 6, (8 individuals/ leaves). Its increased to reach their maximum in November 20 (17 individuals/ 30 leaves).
In 2015 season,the dense population of *C.carnea* was recorded on November 4(5 individuals/ 30 leaves). Two peaks of activity was recorded at the third week of November and First week of December (10 and 11 individuals / 30 leaves). The corresponding calculated average temperature and relative humidity during this period were 19.85°C and 61.0 R.H% and 19.5°C, 62.0 R.H% respectively (Fig.2).

.Summer plantation:

***a)Orius* spp**The obtained data are summarized in (Fig.3). In 2015 season, *Orius* spp. began to appear on cucumber in 3rd week of April (one individuals/ 30 leaves). Two peaks of activity was recorded in 2nd week of May and 1st week of June (48 and 31 individuals/ 30 leaves) the corresponding calculated average temperature and relative humidity during this period were 22.64°C, 66.86 R.H% and 24.56°C and 65.43 R.H.
In season 2016, the number of *Orius* spp. took place in the 4th week of April (18 individuals/ 30 leaves. Its increased to reach their maximum in 3rd week of May (60 individuals/ 30 leaves) at 23.20°C 56.57 R.H% (Fig.4).

These results are in agree ment with those of Abdel – salam *et al*. (1980) whose observed that *orius albidipennis* associated with *Bemisia tabaci,* thrips and *Aphis gossypii*.

b)Metasyrphus corollae.Data given in (Fig.3), in summer plantation of 2015 season, the number of *M. corollae* took place in 4th week of April (3 individuals /30 leaves) and its increased to reach their maximum in 1st week of May (17 individuals/ 30 leaves) at 22.7°C and 64.57 R.H%.

In season 2016, *M. corolla*. began to appear on cucumber in few number at 4th week of April (2 individuels/ 30 leaves) and its decreased to reach one individuels/ 30 leaves in 1st week of May at 22.50°C and 63.14 R.H% (Fig.4).

However, Lugovitsyna *et al*. (1983) showed that syrphid larvae prefered to attack aphid individuals, they play avital part in supperssing aphid populations on cucumber, although their most active periods did not always coincide with the peak of aphid abundance.

c)Coccinella undecimpunctataIn 2014 season the *C. undecimpunctata* began to appear on cucumber plant during third week of April (2 individuals/ 30 leaves) and its increased to reach their maximum in 4th week of April (18 individuals/ 30 leaves) (Fig.3).

In 2016 season, *C. undecimpunctata* began to appear on cucumber 4th week of April (7 individuals / 30 leaves). Three peaks of activity was recorded in 4th week of April, 2nd week of May and 1st week of June (10, 9 and 7 individuals/ 30 leaves). The corresponding calculated average temperature and relative humidity during this period were 22.96 °C, 56.0 R.H%, 21.61 °C, 50.29 R.H% and 27.96 °C, 52.0 R.H % respectively (Fig.4).

On the other hand**, El-Habi *et al.* (1999).**mention that the efficiency was a function of the predator\prey ratio and the initial aphid density at the time of release of the predator. prey density had alarge influence on the fecundity and establishment of this coccinellid in the greenhouse.

d)Chrysoperla carnea ,Data given in (Fig .3) showed that initial number of *C. carnea* in 2015 season occurred in 3rd week of April (5 individuals/ 30 leaves) and its increased to reach their maximum in 3rd week of May (5 individuals/ 30 leaves) at 25.63 °C and 58.48 R.H%.

In 2016 season, the initial number of *C. carnea* occurred in 4th week of April (7 individuals / 30 leaves). Two peaks of activity was recorded in 2nd week of May and 4th week of May (3 and 15 individuals / 30 leaves). The corresponding calculated average temperature and relative humidity during this period were 21.61 °C, 50.29 R.H % and 24.47 °C , 55.0 R.H respectively (Fig.4).

Chrysoperla carnea is a quite common predator in agricultural ecosystem in most of the world countries. The adults feed on pollen, nectar or honeydew of aphids etc. Its larvae are voracious predators of aphids, mites, thrips, mealy bugs and immature whiteflies (Abdel-Salam, 1995 and Carrillo *et al.* ,2004). It is a very useful biological control agent of such insect pests and, therefore, it needs enhancement *of* its population by all possible means (Amjad *et al.* 2006).

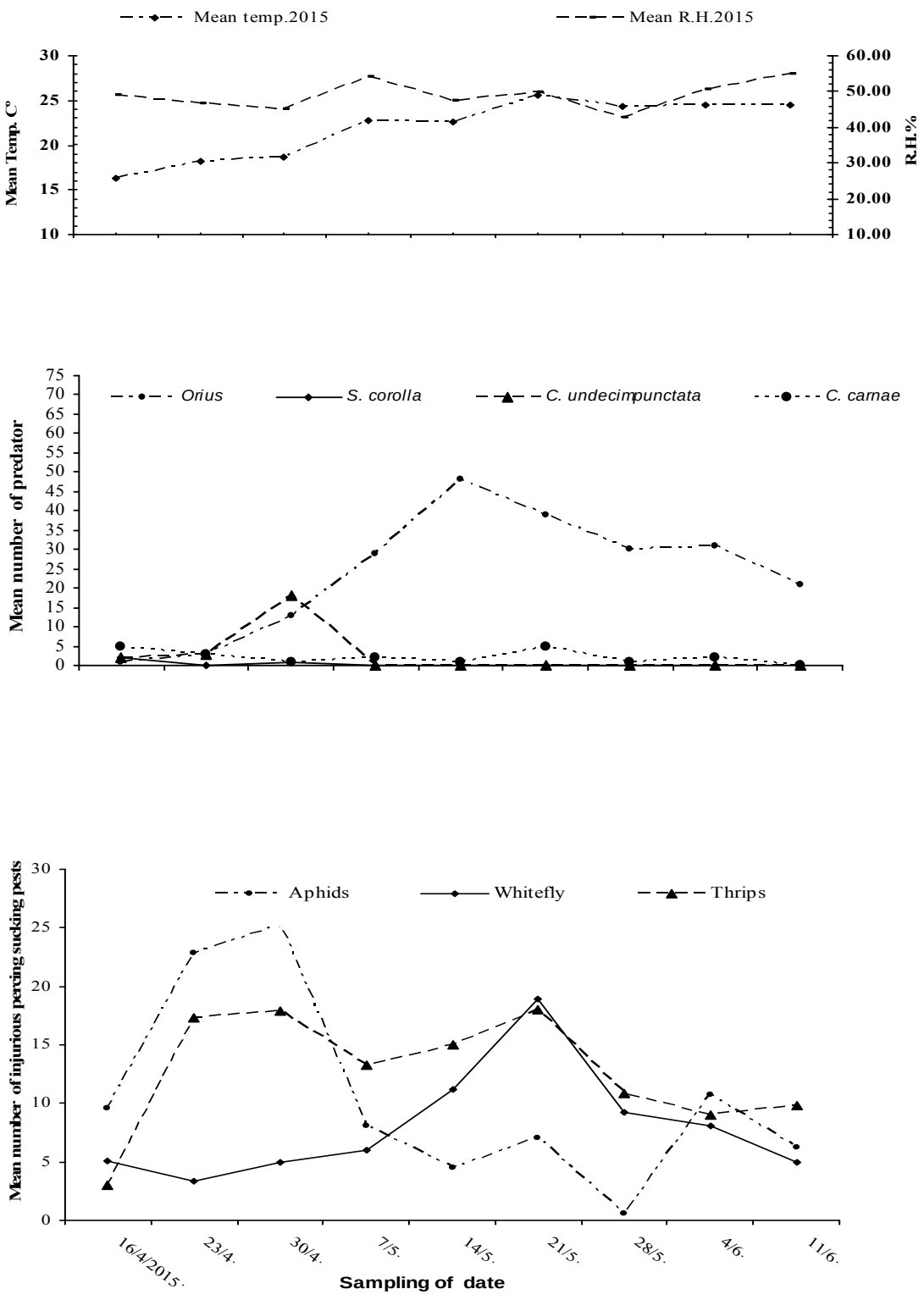

Fig. (3) :Seasonal abundances of certain insects and their associated predators on cucumber plants in summer plantation season of 2015 at Diarb - Nigm district, sharkia Governorate.

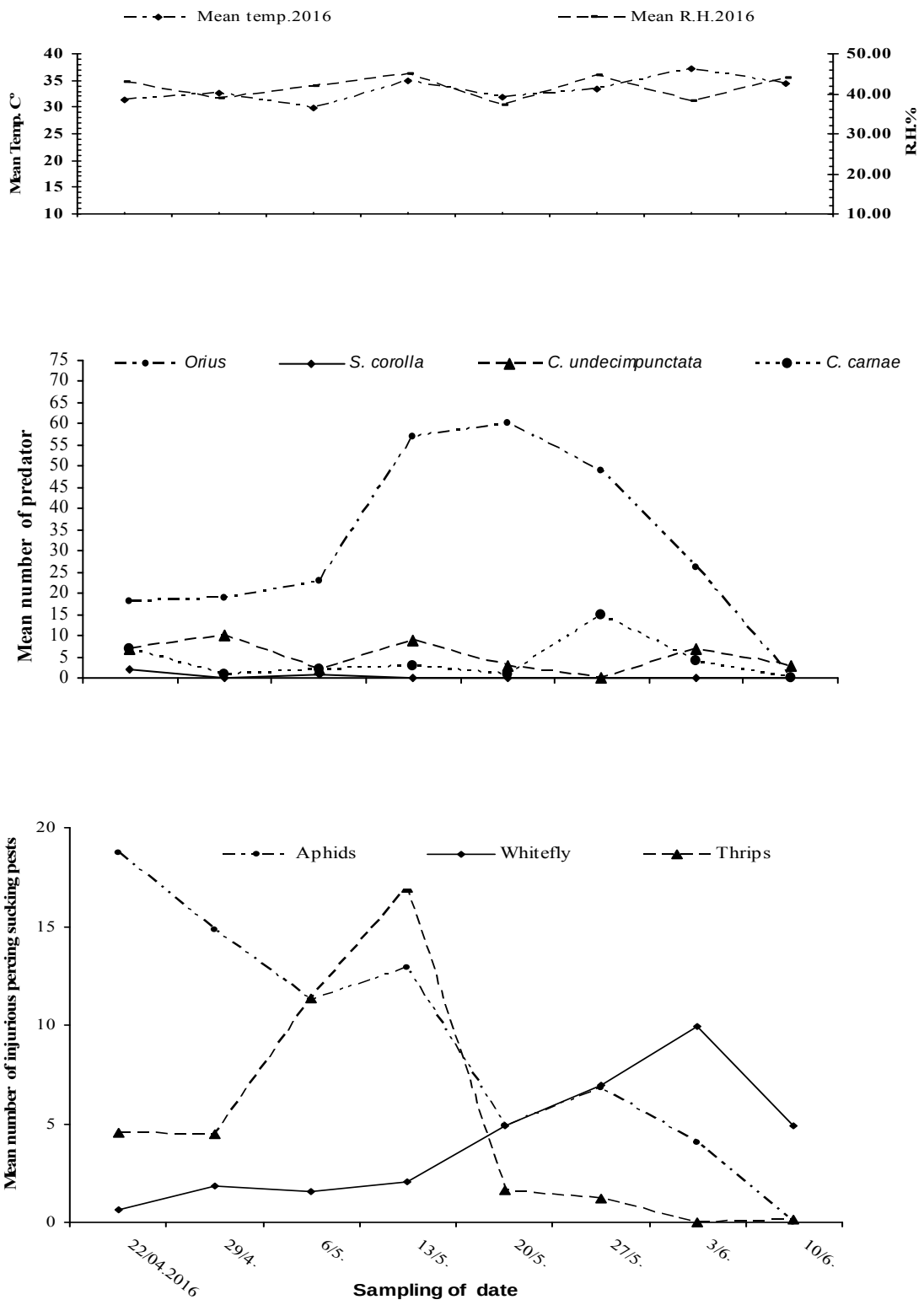

Fig. (4) :Seasonal abundances of certain insects and their associated predators on cucumber plants in summer plantation season of 2016 at Diarb _ Nigm district, sharkia Governorate.

Effect of weather factors on the population density of insects pests and their predators on cucumber at Diarb-Nigm:

Autumn plantation season:

On *A. gossypii,* the minimum, maximum and mean R.H. showed a positive significant correlation (r= 0.6551, 0.5764 and 0.6895) in the first season in 2014 and a positive significant effect with mean R.H in the second season in 2015 of the study.**(**Table 1).

On *B. tabaci* ,the minimum and mean temperature showed a negative significant correlation (r= -0.4863 and -0.4501) in the first season and an insignificant positive effect in the second season of the study **(**Table 1).

On *T.tabaci*, the relative humidity R.H. showed a insignificant correlation in the both season in 2014 and 2015 **(**Table 1).

Predator :

On *Orius* spp the maximum R.H%. had a highly positive significant correlation (r=0.8632) in the second season in 2015 and mean R.H% showed a positive significant effect (r=0.7041) in the second season in 2015 of the study (Table2)

On *C.undecimpunctata*, the maximum and mean temperature showed a negative significant correlation (r= -0.4784 and -0.5664) in the first season and an insignificant effect in the second season of the study (Table2).

On *C.carnea,* the minimum R.H.% showed a positive significant correlation (r= 0.7014) in the first season in 2014 and the maximum and mean R.H. had a positive significant correction in the two season 2014 and 2015 (r=0.4824,0.5346 and 0.5788,0.4916) respective(Table2).

On *M.corollae,* the maximum and mean temp. showed a highly significant correlation (r=0.8912 and -0.8704) in the first season in 2014. The maximum and mean R.H. showed a positive significant correction (r= 0.7263 and 0.4988) in the first season (Table2).

Table (1): Simple correlation between insect pests and weather factors on "cucumber" during "Autumn" season of 2014 and 2015 at Diarb-Nigm district.

Variable	Insect pests					
	2014			2015		
Source	***A. gossypii***	***B. Tabaci***	***T. tabaci***	***A. gossypii***	***B. Tabaci***	***T. tabaci***
Min. Temp	-0.678*	-2595	-0.099	-0.172	0.001	0.081
Max. temp	-0.681*	-0.486*	-0.422	-0.179	0.104	0.354
Mean Temp	-0.796*	-0.45*	-0.037	-0.109	0.079	0.131
Min R.H	0.655*	0.206	0.092	0.277	0.391	0.26
Max R.H	0.576*	0.022	0.037	0.316	0.084	-0.306
Mean R.H	0.69*	0.11	0.005	0.483*	0.368	-0.006

*=Significant Ns= not Significant

Table (2): Simple correlation between predators and cli weather factors on "cucumber"during " Autumn" season of 2014 and 2015 at Diarb Nigm district.

Variable	**Predators**							
	2014				**2015**			
Source	***M. corollae***	***C. undecimpunctata***	***c.carnea***	***orius* spp**	***M. corollae***	***C. undecimpunctata***	***c.carnea***	***Orius* spp**
Min.Temp	-0.7183*	-0.2454	-0.3495	-0.3914	-0.0607	-0.1477	0.1097	-0.3426
Max.Temp	-0.8912**	-0.4784*	-0.4671*	-0.2344	-0.1688	-0.1825	0.1698	-0.4369
MeanTemp	-0.8704**	-0.5664*	-0.3821	-0.4877*	0.0001	0.0468	0.2291	0.3005
Min R.H	0.7263*	0.8108**	0.7014*	-0.3424	0.0523	-0.0952	-0.2054	0.1461
Max R.H	0.3872	0.2662	0.4824*	0.1818	0.6845*	0.6828*	0.5788*	0.8632**
Mean R.H	0.4988*	0.4667	0.5346*	0.0367	0.5989*	0.44	0.4916*	0.7041*

*=Significant Ns= not Significant

Summer plantation season :

On *A. gossypii* , the minimum and maximum temperature showed a negative significant correlation in the two seasons 2015 and 2016 (r= -0.7002, -0.5107, -0.7203 and 0.4724) respectively. The mean temperature cleared a negative significant correlation (r= – 0.6443) in 2015 season and highly negative significant correlation (r =–0.825) in 2016 season (Table3). However, **Abdel- Fattah *et al.* (2000)** showed that partial negative correlation between aphid population density and each of temperature ; wind velocity, photo period and rainfall in summer and nail plantation in both years.

On *B. tabaci* , the minimum, maximum and mean temperature cleared a positive significant correlation in first seasons (r= 0.5091,0.6962 and 0.6214) the mean temperature had a negative significant correlation in second season (r= -0.6411) (Table3).

***On T. tabaci* ,** the minimum R.H. showed a negative significant correlation in the first season in 2015 and a positive an insignificant effect (r= 0.0399) in the second season in 2016 of the study. The maximum relative humidity cleared a negative significant (r= -0.7475) effect in 2016 season (Table3).

Predators:

On *Oruis* sp, the maximum and mean temperature showed a highly positive significant correlation (r= 0.8623 and 0.8109) in the first season and an insignificant effect in the second season of the study (Table4).

On *C. undecumpunctata* , the minimum and mean temperature showed a negative significant correlation (r= -0.5498 and -0.5100) in the first season and insignificant effect in the second season of the study.

On *C. carnea* , the minimum temperature showed a negative a insignificant correlation (r= -0.3513) in the first season and negative insignificant effect (r= 0.0295)in the second season of the study.

On *M. corollae* , the minimum temperature showed a negative an insignificant correlation (r= - 0.1515) in the first season and a negative significant effect (r= -0.5847) in the second season of the study and the maximum temperature cleared a negative

effect in 2016 season.

In Egypt, the change in the environmental factors from year to year, such as the maximum and minimum daily temperature, relative humidity, direction and speed of wind, rain fall,…etc affects the population density and dynamics of insect pests and the occurrence of their natural enemies (Khalifa and El-Khidir, 1965; Aldyhim and Khalil,1993).

Table (3): Simple correlation between insect pests and weather factors on "Cucumber" during " Summer" season of 2015 and 2016 at Diarb -Nigm district.

Variable	Insect pests (Summer Season)					
	2015			2016		
Source	*A. gossypii*	*B. tabaci*	*T. tabaci*	*A. gossypii*	*B. tabaci*	*T. tabaci*
Min. Temp	-0.7002*	0.5091*	-0.056	-0.7203*	-0.0312	0.5747*
Max. Temp	-0.5107*	0.6962*	0.4022	-0.4729*	-0.2278	0.7079*
Mean Temp	-0.6443*	0.6214*	0.1518	-0.825**	-0.6411*	0.8943**
Min R.H	-0.3675	-0.2475	-0.4825*	-0.4089	0.1219	0.0399
Max R.H	0.1339	0.0712	0.3668	0.8154**	0.5916*	-0.7475*
Mean R.H	-0.2285	-0.0714	-0.2627	0.1024	0.3896	-0.2498

*=Significant Ns= not Significant

Table (4): Simple correlation between insect pests and weather factors on "Cucumber" during " Summer" season of 2015 and 2016 at Diarb Nigm district.

Variable	Insect pests							
	2015				2016			
Source	*M. corollae*	*C. undecimpunctata*	*c.carnea*	*orius* spp	*M. corollae*	*C. undecimpunctata*	*c.carnea*	*Orius* spp
Min. Temp	-0.1515	-0.5498*	-0.3513	0.7499*	-0.7262*	0.0216	-0.2628	-0.0045
Max. Temp	0.0358	-0.3866	-0.2758	0.8623**	-0.5847*	0.3039	0.0333	0.0174
Mean.Temp	-0.0947	-0.51*	-0.305	0.8109**	-0.3509	-0.1837	0.0509	-0.3815
Min R.H	-0.0733	-0.4389	-0.3677	0.0627	-0.4686*	-0.1988	0.0295	0.2179
Max R.H	0.455*	-0.2492	0.2684	0.0217	0.6736*	0.3221	0.2415	0.1655
Mean R.H	0.3045	-0.4132	0.0022	0.0941	0.1588	-0.2149	0.4234	0.0467

*=Significant Ns= not Significant

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ARABIC SUMMARY

التوزيع الموسمي لبعض الحشرات الثاقبة الماصة والمفترسات المصاحبة على نباتات الخيار-مصر.

أحمد امين صالح و حمزه محمد السيد الشرقاوى و فتحى السعيد السنطيل و رحاب علاء الدين عبدالسلام

معهد بحوث وقاية النباتات- مركز البحوث الزراعية-الدقى-الجيزه ٢-كلية التكنولوجيا والتنمية جامعة الزقازيق

تمت هذه الدراسة فى منطقة ديرب نجم –محافظة الشرقية خلال موسمي الدراسة (٢٠١٤-٢٠١٥ ، ٢٠١٥-٢٠١٦لدراسة تعداد الحشرات الثاقبة الماصة والمفترسات المصاحبة على نباتات الخيارو أظهرت النتائج أن الحشرات هي :-

من القطن *Aphis gossypii* والذبابة البيضاء *Bemisia tabaci* والتربس ***Thrips tabaci*** وأعداد قليلة من الجاسيد والبقة الخضراء بينما كانت الحشرات المفترسة السائدة هي :

حشرة بقة الاوريس والسيرفس وأسد المن وأبو العيد ذو أحدى عشرة نقطة وأعداد قليلة من الحشرة الرواغة والعناكب الحقيقية.وأوضحت النتائج أن الإصابة بحشرتى من القطن والذبابة البيضاء كانتا أعلى تعدادا في موسم الخريف مقارنة بزراعات الموسم الصيفي خلال كلا الموسمين.

وبيت نتائج عروة الخريف أن لحشرة بقة الاوريس المفترسة قمتين نشاط خلال كلا الموسمين فى الأسبوع الأول والثالث من نوفمبر (١٧ و٢٣ فرد/٣٠ نبات) خلال موسم ٢٠١٤ .والأسبوع الثالث من نوفمبر والثاني من ديسمبر (٩ و١٢ فرد/٣٠ نبات) خلال موسم ٢٠١٥.

بينما في العروة الصيفية كان لكل من مفترس بقة الاوريس وحشرة السيرفس قمتين نشاط خلال الموسم الاول٢٠١٥ (٤٨و ٣١ فرد/٣٠ نبات)و(٣ و١٧ فرد/٣٠ نبات) في الأسبوع الثاني من مايو والأسبوع الأول من يونيو، الأسبوع الرابع من ابريل والأسبوع الأول من مايو على التوالي.

وأيضا كان لمفترس أسد المن قمتين نشاط فى الأسبوع الثاني والرابع من مايو(٣ و١٥ فرد/٣٠ نبات) خلال الموسم الثاني. وأظهرت نتائج التحليل الأحصائى أن لدرجة الحرارة والرطوبة النسبية تأثير معنوي على بعض الحشرات وتأثير غير معنوي على البعض الأخر.