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Studies on Certain Piercing-Sucking Insects Infesting Potato Plants and their Associated Predators in Dakhlia Governorate., Egypt

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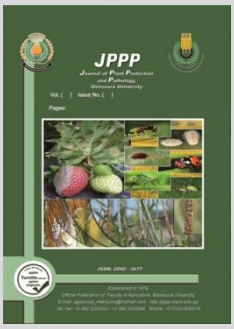

ABSTRACT

Field trials were conducted to study the dominant piercing-sucking insect species infesting potato plants in Dakahlia Governorate. The obtained results indicated that there were six piercing-sucking insects attacking potato plants and the dominant piercing-sucking insects were *Myzus persicae* (Sulker); *Aphis gossypii* Glover; *Empouasca descipiens* Polai. and *Bemisia tabaci* (Gennadius) during the two years of study. Data cleared that *M. persicae* and *A. gossypii* had one peak in each potato plantation and *E. descipiens* recorded two peaks in summer plantation, in the meanwhile three peaks in winter plantation during the two years of investigation. *B. tabaci* had three peaks in summer and winter plantation during the period of study. The obtained results revealed that there were four predators belonging to Family Coccinellidae namely: *Hippodamia trideciapunctata* L., *Coccinella undecimpunctata* L., *Chilomenes propinqua isis* (Mulsant) and *Chilomenes propinqua nilotica*(Mulsant), and one predator from family Chrysopidae, namely *Chrysoperla carnea* (Steph.) was recorded. It can be stated that most dominant species were *H. tridecimpunctata* and *C. undecimpunctata*.

***Keywords*:** Ecology, Weather Factors, *Myzus persicae, Aphis gossypii, Bemisia tabaci, Empouasca descipiens.*

INTRODUCTION

People in Egypt and in the world are getting more conscious to value of use potato for daily-diets. Hence, the demands for good qualities are growing. Field potatoes and stored tubers must be preserving from attacking by potato pests to reach for consumer's healthy condition inside Egypt or another out countries. (Kroschel *et al.* 2020) on the other hand, potato crop is exposed during the growing season and at storage to various diseases; animal and insect pests which cause serious damages quantitative and qualitatively, (Yoon and Choi; 1970 Shands *et al*. 1972; Herakly, 1974; Buxton *et al*, 2005; Mesbah *et al* 2016). Piercing sucking insects are infesting potato plants during the growing season such as *Myzus persicae* (Sulker); *Aphis gossypii* Glover; *Bemisia tabaci* (Gennadius) and *Empouasca descipiens* Polai.. Many ecological studies around over world of piercing sucking insects infested potato-plants (Herakly,1974; Eastop and Raccah, 1988; Amitava. 1998; Buxton *et al*, 2005; Afsah , 2015; Mesbah *et al* 2016; Uwaidem *et al*, 2018 and Krochel *et al*, 2020).

The present investigation amid to study the population-density of major piercing-sucking insects infect potato-plants and associated predators with effects by temperatures and relative humidity.

MATERIALS AND METHODS

Survey and population densities of major pests infest potato-plants were conducted to occurrence and abundance evaluation on potato-plants. The work was complete throughout two successive years 2017-2018. Tested area was about "½feddan" was selected in region of "Meniat El-Naser" Dakhlia, Gov. The block designs were complete randomly or what is called "Completely Randomized Block Design" (CRBD). Each (250m^2) was cultivated by potato-plants during the summer-plantations "Draga Cultivars" in 21-Jan., during study of two-seasons 2017-2018. The winter-plantation of potato-plants was cultivated in the early September followed by normal agriculture-practices and non-insecticidal treated throughout the experimental-period. Each treatment was replicates four times. Two ways were used to account and determine the piercing-sucking pests and their associated predators infest potato-plants as a follow;

a. Plant sample method:

The plant-leaflets samples were collected after cultivating-date in about "21 days". 100-leaflets from all tested area "25-leaflets/plot" taken randomly in morning early, from different level of the plant "2, 1 and 2-leaflets/plant" from "lower, middle and upper level respectively. Samples collected transmitted to lab., inside paper-bags for tested. Binocular microscope using in investigation lower and upper surface for each leaflets carefully; the insect and natural-enemies numbers were recorded. Theses samples were taken weekly for summer plantation. By inverting the leaflets carefully, samples counting continued for period of investigation.

Unknown-insects which collected were known in Plant-Protection-Research-Institute (PPRI), at Dokky, Giza

b. Yellow sticky broad trap method:

The Double-Yellow-Paper-Card (24.5×12cm) coated by material sticky and hunged on wooden-rods with deferent lengths to making of traps on (20cm) of plant during tested periods of potato-plants. Traps putted along longitudinal axis of tested area in regular distances distribution and the card-board were change every week by others and the identification of catched insect were recorded to determine density of population.

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Effect of temperatures and relative-humidity on population density of piercing and sucking insects

Correlations coefficient among weekly mean numbers/insect-pests invested potato-plants; and the weekly mean degrees of temperatures and relative-humidity were calculated statistically.

Statistical analysis:

Data analysis program using two-ways of variance "ANOVA", correlations-coefficient and multiple-regression equations were using of advanced computer program of statistical analysis "Costat, 2004".

RESULTS AND DISCUSSION

1. Population fluctuation and temperatures and relative-humidity effects on major piercing-sucking insect population attacking summer and winter potato plantation during 2017 and 2018 seasons.

A. *Myzus persica*:

A[1]: On summer plantation:

Data results in (Fig. 1) showed that, *M. persicae*, population during experimental work. Weekly catches cleared that, the number of *M. persicae*, started early at the time of plant sprouting. The number of this insect started by low population and fluctuated till the first week of May and recorded one peak at 31th of March (82 indiv. /100 leaflets) in 2018 seasons. The population density then decreased gradually to reach its minimum at the end of the seasons. Khan et al (1984), in Bangladesh, reported that, the peak of aphid-flight occurred around 4th Jan., and 1st week in Feb.

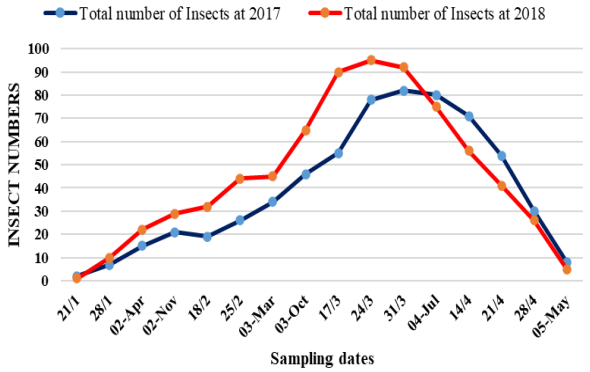

Fig. 1. Relative Abundance of *M. persicae* on summer potato plantation during the two seasons 2017-2018 at Meniat El-Naser Dakhlia Governorate.

Effect of weather factors:

The obtained results in (Table. 1) revealed that, correlation-coefficient and regressions among mean of temperature degrees, relative-humidity and *M. persicae* population density, throughout the tested seasons 2017-2018. Correlation-coefficient values described relationship among parameters of temperatures and size of *M. persicae* populations revealed that, positively significant in the tested seasons, while the relative humidity effects appeared variable-values ranged between slight-significant to non-significant throughout experimental period. Proportional-effect values "explain variance" of temperatures ranged between (27-29%), while relative-humidity ranged between (11-12%) during the two seasons of study (Table 1).

Nakata, 1995, in Japan, studied seasonal population density of aphid on potato-plant from late September (1991) to late September (1993), and data obtained were in-agreement with, Afsah, 2015 report.

Table 1. Correlation-coefficient and regressions among population density of *M. persica* with temperatures and relative-humidity degrees in summer-plantation during the two successive seasons 2017-2018, at Meniat El-Nasr, Dakhlia Governorate.

Seasons	Correlation-coefficient, (r)		Regression, (r^2)	
	Av. of temperatures	Av. of (R.H.)	Av. of temperatures	Av. of (R.H.)
2017	0.51±0.09*	0.32±0.04ns	0.27	0.12
2018	0.58±0.12*	0.31±0.08ns	0.29	0.11

ns = no significant s = significant * = significant with variable degrees r = correlation-coefficient p = the probability.

A[2]: On winter plantation:

Data illustrated in Fig (2) revealed that the population density of *M. persicae* during the two seasons of study. The weakly catch cleared that the number of this insect started early at the time of plant sprouting. The number of this insect started by low population and fluctuated till the first week of November characterized by one peak at 2th of November (44indiv. / 100 leaflets) in 2017 seasons and one peak at 26th of October (32 indiv. / 100 leaflets) in 2018 seasons. The population density then decreased gradually to reach its minimum at the end of the seasons.

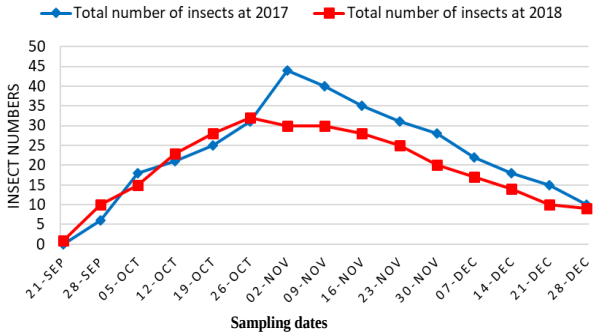

Fig. 2. Population density of *M. persicae* on winter potato plantation during the two seasons 2017-2018 at Meniat El-Naser, Dakhlia Governorate.

Effect of weather factors:

The obtained results in (Table. 2) revealed that, correlation-coefficient and regressions among mean of temperature degrees, relative-humidity and *M. persicae* population density, throughout the tested seasons 2017-2018. Correlation-coefficient values described relationship among parameters of temperatures and size of *M. persicae* populations revealed that, positively significant in the tested seasons, while the relative humidity effects appeared variable-values ranged between slight-significant to non-significant throughout experimental period. Proportional-effect values "explain variance" of temperatures ranged between (30-32%), while relative-humidity ranged between (12-17%) during the two seasons of study Table (2).

B. *Aphis gossypii*:

B[1]: On summer plantation:

As shown as in Fig. (3) The population density of *A. gossypii* during the two seasons of study, the weakly catch revealed that the number of this insect started early at the time of plant sprouting. The number of this insect started by low population and fluctuated till the first week of March

and recorded one peak at 7th of April (38 indiv./100 leaflets) in 2017 seasons. The population density then decreased gradually to reach its minimum at the end of the seasons.

Cermeli (1989) recorded that the aphid affecting potato crops in Venezuela. He found that the main species were *A. gossypii*; *Macrosiphum euphoraldae* and *M. Persicae.*

Table 2. Correlation-coefficient and regressions among population density of *M. persica* with temperatures and relative-humidity degrees in winter–plantation during the two successive seasons 2017-2018, at Meniat El-Nasr, Dakhlia Governorate.

Seasons	Correlation-coefficient, (r)		Regression, (r^2)	
	Av. of temperatures	Av. of (R.H.)	Av. of temperatures	Av. of (R.H.)
2017	0.60±0.09**	0.29±0.04ns	0.30	0.12
2018	0.52±0.07*	0.34±0.06ns	0.32	0.17

ns = no significant s = significant * = significant with variable degrees r = correlation-coefficient p = the probability.

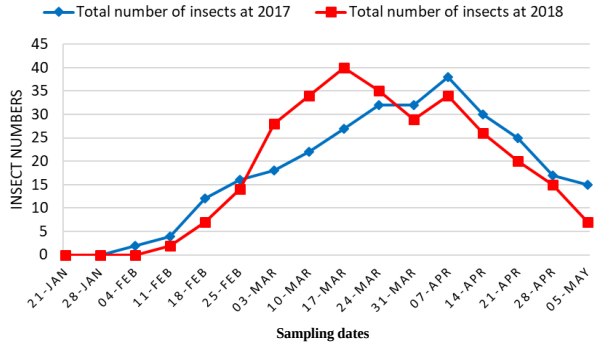

Fig. 3. Relative Abundance of *A. gossypii* on summer potato plantation during the two seasons 2017-2018 at Meniat El-Naser Dakhlia Governorate

Effect of weather factor:

The obtained results in (Table. 3) revealed that, correlation-coefficient and regressions among mean of temperature degrees, relative-humidity and *A. gossypii* population density, throughout the tested seasons 2017-2018. Correlation-coefficient values described relationship among parameters of temperatures and size of *A. gossypii* populations revealed that, positively significant in the tested seasons, while the relative humidity effects appeared variable-values ranged between slight-significant to non-significant throughout experimental period. Proportional-effect values "explain variance" of temperatures ranged between (36-40%), while relative-humidity ranged between (16-18%) during the two seasons of study (Table 3).

Table 3. Correlation-coefficient and regressions among population density of *Aphis gossypii* with temperatures and relative-humidity degrees in summer-plantation during the two successive seasons 2017-2018, at Meniat El-Nasr, Dakhlia Governorate.

Seasons	Correlation-coefficient, (r)		Regression, (r^2)	
	Av. of temperatures	Av. Of (R.H.)	Av. of temperatures	Av. of (R.H.)
2017	0.45± 0.05 ns	0.22±0.03ns	0.36	0.16
2018	0.62±0.07**	0.32±0.04ns	0.40	0.18

ns = no significant s = significant * = significant with variable degrees r = correlation-coefficient p = the probability.

Yakonov, and Chenko, 1982, stated that survey of aphids presents on planting of potato grown for seed was carried out to virus identifying vectors infest potato plant, and the data indicated that, 4 aphids species were vectors to potato-viruses, namely, *Myzus persicae*; *Aulacorthum solani*; *Aphis gossypii* and *A. framgulae*. Nakata 1995, found that *A. gossypii* began to be appeared in late May or early June until the end of June.

B[2]: On winter plantation:

Results demonstrated in Fig. (4) revered that the population density of *A. gossypii* during the two seasons of study. The weakly catch revealed that the number of this insect started early at the time of plant sprouting. The number of this insect started by low population and fluctuated till the third week of October. This insect had one peak at 19th of October (27 indiv. / 100 leaflets) in 2017 seasons. The population density then decreased gradually to reach its minimum at the end of the seasons.

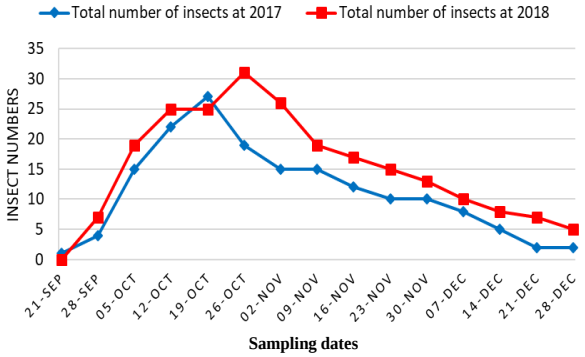

Fig. 4. Population density of *A. gossypii* on winter potato plantation during the two seasons 2017-2018 at Meniat El-Naser, Dakhlia Governorate.

Effect of weather factors:

The obtained results in (Table. 4) revealed that, correlation-coefficient and regressions among mean of temperature degrees, relative-humidity and *A. gossypii* population density, throughout the tested seasons 2017-2018. Correlation-coefficient values described relationship among parameters of temperatures and size of *A. gossypii* populations revealed that, positively significant in the tested seasons, while the relative humidity effects appeared variable-values ranged between slight-significant to non-significant throughout experimental period. Proportional-effect values "explain variance" of temperatures ranged between (25-32%), while relative-humidity ranged between (14-19%) during the two seasons of study Table (4).

Table 4. Correlation-coefficient and regressions among population density of *A. gossypii* with temperatures and relative-humidity degrees in winter–plantation during the two successive seasons 2017-2018, at Meniat El-Nasr, Dakhlia Governorate.

Seasons	Correlation-coefficient, (r)		Regression, (r^2)	
	Av. of temperatures	Av. of (R.H.)	Av. of temperatures	Av. of (R.H.)
2017	0.38±0.04ns	0.18±0.01ns	0.25	0.14
2018	0.56±0.06*	0.40±0.05ns	0.32	0.19

ns = no significant s = significant * = significant with variable degrees r = correlation-coefficient p = the probability.

C. *Empoasca descipiens*:

C[1]. On summer plantation:

The results illustrated in Fig. (5) cleared that the population density of *E. descipiens* during the two seasons of

study. The weakly catch showed that the number of this insect started early at the time of plant sprouting. The number of this insect started by low population and fluctuated till the first week of March recorded by two peaks at 17th of March (32indiv. / 100 leaflets) and 14th of April (36 indiv./100 leaflets) in 2017 seasons. The population density then decreased gradually to reach its minimum at the end of the seasons.

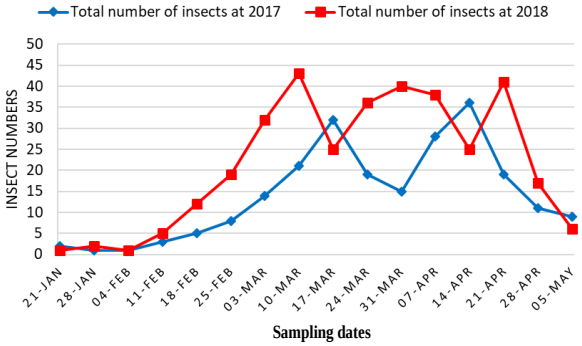

Fig. 5. Relative Abundance of *E. descipiens* on summer potato plantation during the two seasons of study at Meniat El-Naser Dakhlia Governorate.

Effect of weather factors:

The obtained results in (Table. 5) revealed that, correlation-coefficient and regressions among mean of temperature degrees, relative-humidity and *E. descipiens* population density, throughout the tested seasons 2017-2018. Correlation-coefficient values described relationship among parameters of temperatures and size of *E. descipiens* populations revealed that, positively significant in the tested seasons, while the relative humidity effects appeared variable-values ranged between slight-significant to non-significant throughout experimental period. Proportional-effect values "explain variance" of temperatures ranged between (17-26%), while relative-humidity ranged between (14-19%) during the two seasons of study (Table 5).

Results recorded are generally in agreement with some investigators (Asena, 1972; Herakly, 1974; Afsah, 2015; Mesbah *et al* 2016).

Table 5. Correlation-coefficient and regressions among population density of *E. descipiens* with temperatures and relative-humidity degrees in summer-plantation during the two successive seasons 2017-2018, at Meniat El-Nasr, Dakhlia Governorate.

Seasons	Correlation-coefficient, (r)		Regression, (r^2)	
	Av. of temperatures	Av. of (R.H.)	Av. of temperatures	Av. of (R.H.)
2017	0.31±0.01ns	0.18±0.01 ns	0.17	0.14
2018	0.48±0.03ns	0.22±0.02ns	0.26	0.19

ns = no significant s = significant * = significant with variable degrees r = correlation-coefficient p = the probability.

C[2]. On winter plantation:

Data demonstrated in Fig. (6) indicated that the population density of *E. descipiens* during the two seasons of study. The weakly catch revealed that the number of this insect started early at the time of plant sprouting. The number of this insect started by low population and fluctuated till the first week of October. This insect recorded three peaks at 5th of October (35indiv. / 100 leaflets), 26th of October (42 indiv. / 100 leaflets) and 23th of November (36 indiv. / 100 leaflets) in 2017 seasons, and three peaks at 12th of October (41 indiv. / 100 leaflets), 2th of November (48 indiv. / 100 leaflets) and 30th of November (40indiv. / 100 leaflets) in 2018 seasons. The population density then decreased gradually to reach its minimum at the end of the seasons.

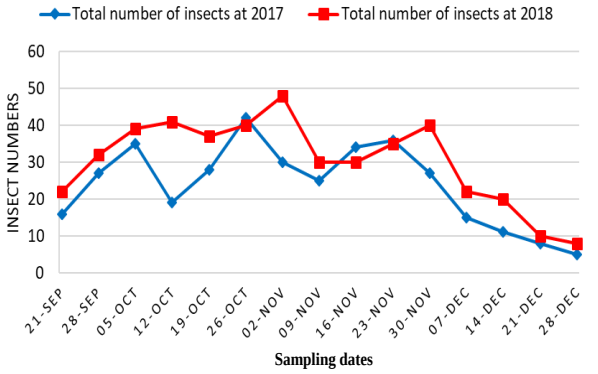

Fig. 6. Population density of *E. descipiens* on winter potato plantation during the two seasons 2017-2018 at Meniat El-Naser, Dakhlia Governorate.

Effect of weather factors:

The obtained results in (Table. 6) revealed that, correlation-coefficient and regressions among mean of temperature degrees, relative-humidity and *E. descipiens* population density, throughout the tested seasons 2017-2018. Correlation-coefficient values described relationship among parameters of temperatures and size of *E. descipiens* populations revealed that, positively significant in the tested seasons, while the relative humidity effects appeared variable-values ranged between slight-significant to non-significant throughout experimental period. Proportional-effect values "explain variance" of temperatures ranged between (21-33%), while relative-humidity ranged between (12-20%) during the two seasons of study (Table 6).

Table 6. Correlation-coefficient and regressions among population density of *E. descipiens* with temperatures and relative-humidity degrees in winter–plantation during the two successive seasons 2017-2018, at Meniat El-Nasr, Dakhlia Governorate.

Seasons	Correlation-coefficient, (r)		Regression, (r^2)	
	Av. of temperatures	Av. of (R.H.)	Av. of temperatures	Av. of (R.H.)
2017	0.28±0.04ns	0.25±0.03ns	0.21	0.12
2018	0.58±0.09*	0.37±0.05ns	0.33	0.20

ns = no significant s = significant * = significant with variable degrees r = correlation-coefficient p = the probability.

D. *Bemisia tabaci*:

D[1]:On summer plantation:

Results illustrated in Fig. (7) showed that the population density of *B. tabaci* during the two seasons of study. The weakly catch revealed that the number of this insect started early at the time of plant sprouting. The number of this insect started by low population and fluctuated till the third week of February and recorded three peaks at 25th of February (35indiv. / 100 leaflets), 24th of March (44 indiv./100 leaflets) and 14th of May (55 indiv. /100 leaflets) in 2017 seasons. The population density then decreased gradually to reach its minimum at the end of the seasons.

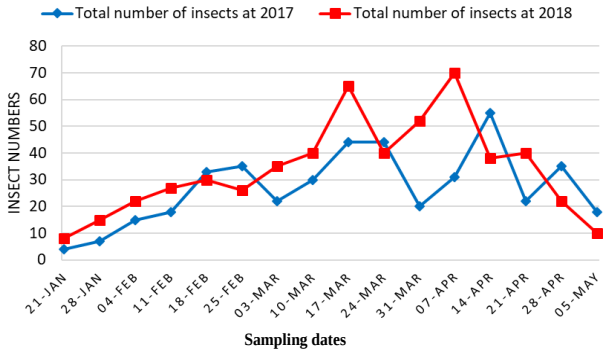

Fig. 7. Relative Abundance of *B. tabaci* on summer potato plantation during the two seasons 2017-2018 at Meniat El-Naser, Dakhlia Governorate.

Effect of weather factors:

The obtained results in (Table. 7) revealed that, correlation-coefficient and regressions among mean of temperature degrees, relative-humidity and *B. tabaci* population density, throughout the tested seasons 2017-2018. Correlation-coefficient values described relationship among parameters of temperatures and size of *B. tabaci* populations revealed that, positively significant in the tested seasons, while the relative humidity effects appeared variable-values ranged between slight-significant to non-significant throughout experimental period. Proportional-effect values "explain variance" of temperatures ranged between (34-28%), while relative-humidity ranged between (15-17%) during the two seasons of study, Table (7).

Table 7. Correlation-coefficient and regressions among population density of *B. tabaci* with temperatures and relative-humidity degrees in summer-plantation during the two successive seasons 2017-2018, at Meniat El-Nasr, Dakhlia Governorate.

Seasons	Correlation-coefficient, (r)		Regression, (r^2)	
	Av. of temperatures	Av. of (R.H.)	Av. of temperatures	Av. of (R.H.)
2017	0.56±0.09*	0.23±0.03 ns	0.34	0.15
2018	0.51±0.06*	0.49±0.08*	0.28	0.17

ns = no significant s = significant * = significant with variable degrees r = correlation-coefficient p = the probability.

D^2: On winter plantation:

A shown in Fig. (8) the population density of *B. tabaci* during the two seasons of study. The weakly catch revealed that the number of this insect started early at the time of plant sprouting. The number of this insect started by low population and fluctuated till the first week of October characterized by three peaks at 19th of October (62indiv. / 100 leaflets), 9th of November (75indiv. / 100 leaflets) and 30th of November (30indiv. / 100 leaflets) in 2017 seasons. The population density then decreased gradually to reach its minimum at the end of the seasons.

Effect of weather factor:

The obtained results in (Table. 8) revealed that, correlation-coefficient and regressions among mean of temperature degrees, relative-humidity and *B. tabaci* population density, throughout the tested seasons 2017-2018. Correlation-coefficient values described relationship among parameters of temperatures and size of *B. tabaci* populations revealed that, positively significant in the tested seasons, while the relative humidity effects appeared variable-values ranged between slight-significant to non-significant throughout experimental period. Proportional-effect values "explain variance" of temperatures ranged between (35-27%), while relative-humidity ranged between (10-19%) during the two seasons of study, Table (8).

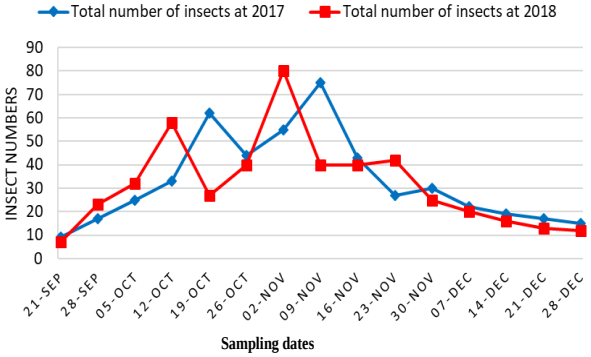

Fig. 8. Population density of *B. tabaci* on winter potato plantation during the two seasons 2017-2018 at Meniat El-Naser, Dakhlia Governorate.

Table 8. Correlation-coefficient and regressions among population density of *B. tabaci* with temperatures and relative-humidity degrees in winter–plantation during the two successive seasons 2017-2018, at Meniat El-Nasr, Dakhlia Governorate.

Seasons	Correlation-coefficient, (r)		Regression, (r^2)	
	Av. of temperatures	Av. of (R.H.)	Av. of temperatures	Av. of (R.H.)
2017	0.62±0.09**	0.36±0.04 ns	0.35	0.10
2018	0.50±0.07*	0.40±0.06 ns	0.27	0.19

ns = no significant s = significant * = significant with variable degrees r = correlation-coefficient p = the probability.

2. Numbers of some natural enemies on summer and winter plantations during 2017 and 2018 seasons.

The total number and percentages of dominant predators and parasitoids associated with the main piercing-sucking insect pests presented in Tables (9 and 10).

Table 9. Total number of some predators and parasitoids on summer plantation and their percentages to the total catch inhabiting potato crop during 2017 and 2018 seasons at Meniat El-Nasr, Dakhlia Governorate.

Years	2017		2018	
Orders and species	T. num. of insect species	% to the total numbers	T. num. of insect species	% to the total numbers
Order: Coleoptera				
H. tredecimpunctata	191	23.87	178	24.86
C. undecimpunctata	140	17.50	124	17.32
Ch. propinqua isis	115	14.37	96	13.41
Ch. propinqua nilotica	128	16.00	98	13.69
Order: Diptera				
T. larvarum	135	16.88	132	18.44
Order: Neuroptera				
C. carnea	91	11.37	88	12.29

It can be seen that there were four predator species belonging to Family Coccinellidae Order Coleoptera these predators namely: *H.trideciapunctata*, *C. undecimpunctata*, *Ch. propinqua isis* and *Ch. propinqua nilotica*, and one predator specie from family Chrysopidae, Order Neuroptera

was namely *C. carnea* was recorded. And one parasitoid specie from Order Diptera was found. It can be stated from these tables that most dominant species were *H. tridecimpunctata* and *C.undecimpuncitata*.

The similar studies, Coll *et al*., (2000) and Alyaa (2006) recorded that the predator insects which associated with potato insect pests. These results are in harmony with trends given by some researchers (Herakly, 1974; Kuroli and Nemeth, 1983; Debnath and borah, 2002; Buxton *et al*, 2005; Alyaa, 2006; Afsah, 2015).

Table 10. Total number of some predators and parasitoids on winter plantation and their percentages to the total catch inhabiting potato crop during 2017 and 2018 seasons, at Meniat El-Nasr, Dakhlia Governorate.

Years	2017		2018	
Orders and species	T.num.of insect species	% to the total numbers	T.num. of insect species	% to the total numbers
Order: Coleoptera				
H. tredecimpunctata	169	36.82	156	32.10
C. undecimpunctata	76	16.56	75	15.43
Ch. propinqua isis	56	12.20	64	13.17
Ch. propinqua nilotica	56	12.20	57	11.73
Order: Diptera				
T. larvarum	27	5.88	46	9.47
Order: Neuroptera				
C. carnea	75	16.34	88	18.11

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دراسات على بعض الحشرات الثاقبة الماصة التى تصيب نباتات البطاطس والمفترسات الحشرية المصاحبة لها فى محافظة الدقهلية

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اجريت تجارب حقلية على الحشرات الثاقبة الماصة الشائعة التى تصيب نباتات البطاطس فى محافظة الدقهلية و لقد اظهرت النتائج المتحصل عليها وجود ستة أنواع من الحشرات الثاقبة الماصة تهاجم نباتات البطاطس و كان اكثرهم شيوعا من الخوخ الاخضر و من القطن و نطاط أوراق البطاطس و النبابة البيضاء و أوضحت النتائج أن من الخوخ الاخضر و من القطن كلا منهما له ذروة تعداد واحدة فى كل عروة سواء الصيفية أو الشتوية بينما نطاط أوراق البطاطس كان له ذروتين فى العروة الصيفية بينما فى العروة الشتوية كان له ثلاث ذروات أما النبابة البيضاء فكان لها ثلاث ذروات فى العروة الصيفية و العروة الشتوية خلال فترة الدراسة كذلك اثبتت النتائج المتحصل عليها تسجيل أربعة انواع من المفترسات الحشرية التابعة لفصيلة أبو العيد و هم أبو العيد ذو الثلاثة عشر نقطة و أبو العيد ذو احدى عشر نقطة و أبو العيد الاسود و أبو العيد السمنى كما تم تسجيل نوع واحد من المفترسات التابعة لرتبة معرقة الاجنحة و هو اسد المن الاخضر كما أظهرت النتائج أن أبو العيد ذو الثلاثة عشر نقط و أبو العيد ذو احدى عشر نقطة كان اكثرهم تواجدا و شيوعا فى حقول البطاطس.