

Taxonomic and ecological studies on the new record, *Ceroplastes cirripediformis* Comstock, 1881, (Coccidae: Homoptera) at Qaliobiya governorate.

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ABSTRACT

Ceroplastes cirripediformis Comstock is collected for the first time from Egypt; it is a serious soft scale pest on guava trees, with a high occurrence reached to 371 individuals/ leaf in the highest generation at mid November 2006 at Qaliobiya governorate. A key with figures and illustrations was constructed to differentiate *Ceroplastes* Egyptian species. Moreover the seasonal fluctuation of different stages of this newly recorded species is included, where the pest total population and nymphal stage had two annual peaks per year. Also the pest had two annual generations per year on mid February and November. The associated parasite, *Tetrastichus ceroplastae* (Girault) is collected and identified. The relationship between this pest and its parasitic & climatic factors is studied to help in the integrated pest control management.

Keywords: Qaliobiya, *Ceroplastes cirripediformis*, seasonal fluctuation

INTRODUCTION

Guava is one of the most popular fruit in Egypt. It is attacked by various soft and hard scale insects that cause severe damage due to its toxic secretion and the copious production of the honey dew, the substrate for various sooty mould fungi, that leading to reduction in quality and quantity of the crop. Sever infestations may result in reduction of subsequent yield and serious injury to the trees (Helmy *et al.*, 1986 & Radwan 2003).

Ceroplastes cirripediformis Comstock, family Coccidae, the third largest family of scale insects, after Diaspididae and Pseudococcidae; it is a pest of many ornamentals in Florida, it infest the leaves during the first and second nymphal instar, then migrate to the woody tissues after malting to the third instar, but the eggs are protected by the body of the adult female till hatching (Hamon & Williams, 1984 & Sahar, 2010).

Due to the important role of the hymenoptetous parasitic insects in the biological and integrated control (Abd-Rabou,2003), where the major part of the success of the control programs is based on the correct identification of the pest as well as its natural enemies, for example the success in the biological control of red scale in California is delayed for over half a century because of the misidentification of its natural enemies (Prinsloo, 1984). So this present study aimed to identify with illustration to this first recorded pest, *Ceroplastes cirripediformis* Comstock and its parasite, in addition to the seasonal fluctuation during two successive years.

MATERIAL AND METHODS

The identification of this species was done by using the different keys of (Ezzat & Husein 1967, Hamon & Williams 1984 and Ben Dov 1993).

For studying the seasonal fluctuation of this species, an orchard of about 5 Feddans at Nob-Taha, Shebein El-kanater were chosen to the fortnight visits from mid January 2005 till 1st January 2007. This investigated area doesn't receive any chemical control at least for two years previous this work and also during this study, but received agricultural practices. Five trees were selected of the same age, height, size, vigor and size of canopy, as well as homogenous in their insect infestation; the samples of 30 leaves (10 leaves X 3 replicates) were picked out from the trees. Alive individuals of insect stages (pre-adult, adult females & graved females) on the leaves were aggregated. In addition the half monthly variation (H. M.V.) were calculated and estimated according to Bodenheimer, 1951. The associated parasite was identified by using the different keys (Prinsloo, 1984 & Graham, 1987).

The main climatic factors maximum temperature (Max.Temp.), minimum temperature (Min.Temp.), relative humidity (R.H. %), rain fall and wind speed were obtained from the aid of Meteorological Agency at Qaliobiya governorate. The partial regression (b. reg.) was calculated according to Sendecor and Cochran (1989).

RESULTS & DISCUSSION

Genus *Ceroplastes* Gray, 1828

Description: Body round, oval or irregular in outline, usually convex. Females covered with dense wax, derm heavily sclerotized. Numerous types of trilocular pores present; body setae variable in size, shape and distribution. Submarginal tubercles absent. Anal plates usually longer than wide, normally at apex of cone-like elevated sclerotized caudal process. Anal plate setae variable, anal ring with 8 setae. Antennae 6 to 8-segmented; legs usually well developed. Quinquelocular pores in spiracular furrows, multilocular pores present in vulvar area and abdomen. Tubular ducts variable in size, shape and distribution. Spiracular setae numerous, conical, hemispherical or bullet-shaped.

Note: There were five recorded *Ceroplastes* species in Egyptian fauna, they are: *Ceroplastes rusci* (L.) (Fig wax scale), *Ceroplastes floridensis* Comstock (Citrus wax scale) and *Ceroplastes africanus* Green, 1929 (Sunt scale) which become synonym to *Cer. minosae* Signoret, 1872, then transferee to genus *Waxiella* (Ben-Dov, 1993); also *Cer. actiniformis* Green, 1896, which was collected from palm only once, its -diagnosis is not sufficient (Ezzat & Hussein, 1967) and Lastly *Cer. denudatus* Cockerell, 1893 (Fig wax scale) became synonym to *Cer. rusci* (L.).

Now, *Ceroplastes ciripediformis* Comstock, 1881 (Barnacle wax scale), is recorded from Egypt for the first time and can easily distinguish from other two related *Ceroplastes* species *Ceroplastes rusci* (L.) (Fig wax scale) and *Ceroplastes floridensis* Comstock (Citrus wax scale) in the Egyptian fauna by the following key.

Key to *Ceroplastes* species in the Egyptian fauna

1-The scale dark red in color with distinct red lines between plates, dorsal pores predominately bilocular with few simple or triocular, spiracular setae bullet-shaped in three rows, the dorsal sclerotization wide and concentrated on an elevated area;

antennae 6- segmented, with two setae near its base; legs with tibiotarsal articulatory sclerosis (Fig.1).....*Cer. rusci* (L.) , 1758
-The scale lighter in color, without these combination of characters.....2
2-The scale white in color, without clear distinct plates and lake nuclei, tibiotarsal sclerosis absent, antenna 6-segmented, ventral tubular ducts with broad inner filaments (Fig.2).....*Cer. floridensis* Comstock, 1881
-The scale grey with light pink color, with clear plates and nuclei, tibiotarsal sclerosis present, antenna 7-segmented, ventral tubular ducts without broad inner filaments (FIG.3-6).....*Cer. Cirripediformis* Comstock, 1881

***Ceroplastes cirripediformis* Comstock, 1881
(Barnacle wax scale) (Figs3-6)**

Ceroplastes cirripediformis Comstock, 1881. Dept. Agric. Comnr. Agric. Rpt.:333.

Diagnosis: Fresh specimens grayish white, 3-5mm, oval in dorsal view, hemispherical in lateral view, without horns, with one dorsal and six lateral plates with nuclei. Microscopically, female ovate, derm membranous, sclerotized in old-aged female, spiracular depressions distinct; dorsal setae capitate, with thirty stigmatic setae in three rows; marginal setae simple; multilocular pores with five loculei near spiracles, with ten loculei near anal plate. Tibiotarsal sclerosis present; claw without denticle, antennae 7- segmented, tubular ducts with thin inner filaments; anal plate rounded without distinct angles, without submarginal tubercles, with one subapical seta; with numerous dorsal pores: bilocular pores and triangular trilocular pores.

Note- The species can easily distinguished by the absence of filamentous ducts, anal plates each with one ventral subapical seta, distinct capitate dorsal setae, and multilocular pores numerous on anterior abdominal segments.

The associated parasite:

During the present investigation, the parasite *Tetrastichus ceroplastae* (Girault) (Fig.7) is found associated with *Ceroplastes cirripediformis* Comstock, this hymenopterous parasite belongs to family Aphelinidae. It is easily distinguished from other species by its strongly sclerotized black color and small size about 1mm in length. Head, body dark blackish brown to black, shiny but without metallic tinge; legs yellow except coxae and femora blackish, tarsi 4-segmented; wings hyaline, antenna with long setae; scutellum with two longitudinal grooves; gaster broadly jointed to propodeum, without a petiole, axillae of thorax are projected forwards and they are broadly separated from each other.

Note: Male similar to female, except the genitalia and the structure of antenna: 9-segmented in male, funicle 4- segmented; 8-segmented in female, funicle 3-segmented and clubbed.

Seasonal fluctuation of *Ceroplastes cirripediformis* Comstock (preadult, adult female, gravid female) infesting guava trees at Qaliobiya governorate from mid January 2005 till 1st January 2007).

1) Seasonal fluctuation of the pre-adult stage: Data in the Tables (1, 2) and Fig. (8) Illustrated the dynamic curve of *Cer. cirripediformis* preadult, it had only two heavily occurrence, whereas the first was at mid February, with (118,150 individual/ leaf) and the second was (114,358 individual/leaf) at mid November during the two studied years respectively. Also the results clearly showed that: there was depression period from April till August.

2) Seasonal fluctuation of the adult females: Data in the same Tables and Fig. (9) indicated that: The highest occurrence that reached 20 adult/leaf was during 1st October and disappeared during interrupted period.

Seasonal fluctuation of the gravid female: Examination of the data in the Table (1) and Fig. (10) gave the same picture, where the highest occurrence of the gravid females was during mid October reached 15 gravid females/leaf, followed by mid November 12 gravid females / leaf.

4) Seasonal fluctuation of *Cer. cirripediformis* total population: It was detected in Table (1) & Fig.(11) and indicated that: the densely presence of this population at mid February with (121,157 individual / leaf) and at mid November with (115, 371 individual/ leaf) during the two studied years respectively. On the other hand, there was a long depression period started from mid April till 1st August.

From this results of studying the seasonal fluctuation of *Ceroplastes cirripediformis* (pre-adult, adult and gravid stage) and total population (from mid January 2005 till 1st January 2007) it showed that: the pest has two highly representation at the end of winter and autumn, where the climatic factors were suitable temperatures (18.83- 25.19), relative humidity (54.56- 58.02%), slight rain fall and the wind speed not high and the parasite population (*Tetrastichus ceroplastae* (Girault)) was low. there was a flaccid representation at the end of spring and during summer months due to the unsuitable climatic factors which started by period of rise temperatures (26.19-36.49)and high speed of Ghamasin wind; these results are in agreement with that obtained by Amin, A.(1970); Habib *et al.*(1971); Swailem, S. (1976); Helmy *et al.* (1986); El-Emery *et al.* (1995) and (their studies were on the related species *Ceroplastes floridenses* Comstock)and Morsi & Mousa (2003) during their studying the seasonal abundance of *Ceroplastes rusci* L., they found that it has 2-3 peaks annually.

Half monthly variation in *Ceroplastes cirripediformis* population on guava trees.

Data given in tables (1&2) and illustrated in Figures (12&13) is responsible to clear the rate of the half monthly changes in *Cer. cirripediformis* population on guava trees during the two sequent years (from mid January 2005-mid January 2007). The maximum monthly variations were recorded at mid October with 3.33 and 5.52; on the other hand, low variation was (0.17 at 1st March), during the two studied years respectively.

The previous results means that this pest had favorable periods where the highest one recorded in October due to the more favorable biotic and abiotic factors where the temperature and relative humidity were moderate, no rain fall, low wind speed and low population of the parasite. On the other hand the most decline period recorded in early March due to the unfavorable condition, these results were in agreement with those obtained by Swailem *et al.* (1976) and El Emery (1995) who mentioned that *C. floridensis* had also the highest favorable period in October and September during the two studied years and also the decline periods during early March in the first year and May in the second year.

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Table 1: Seasonal abundance of *Ceroplastes cirripediformis* different stages and the total population / leaf on Guava tree; the half monthly variation in relation to climatic factors from mid Jan 2005 to 1st Jan 2006.

Season	Sampling dates	No. of individuals / leaf				H.M.V	Parasite	Climatic Factors				
		Nymph	Ad. Female	Gravid	Total pop.			Temperature		R.H.	Rain fall	wind speed
								Min	Max			
Winter	15/1/2005	55	5	2	62	0.00	12	7.27	0.47	59.33	0.00	7.38
	1/2/2005	39	3	4	46	0.74	9	8.05	19.55	56.02	4.00	12.80
	15/2/2005	118	1	2	121	2.63	4	10.85	18.83	60.34	0.00	10.67
	1/3/2005	17	2	1	20	0.17	4	11.29	22.36	56.79	6.00	13.98
	15/3/2005	6	2	2	10	0.50	3	11.61	24.76	49.54	0.00	10.35
	1/4/2005	2	3	1	6	0.60	1	15.17	22.18	54.25	12.00	10.06
Spring	15/4/2005	1	1	0	2	0.33	1	15.97	27.86	52.50	0.00	10.55
	1/5/2005	2	1	0	3	1.50	0	13.93	29.34	53.90	0.00	13.05
	15/5/2005	1	3	0	4	1.33	1	18.26	27.14	49.47	0.00	13.07
	1/6/2005	2	4	1	7	1.75	0	19.32	33.45	63.93	0.00	10.97
	15/6/2005	3	8	2	13	1.86	2	20.68	32.55	47.40	0.00	17.08
	1/7/2005	1	2	3	6	0.46	3	22.68	32.89	48.93	0.00	10.04
Summer	15/7/2005	5	1	4	10	1.67	4	23.10	35.60	66.14	0.00	10.55
	1/8/2005	4	0	5	9	0.90	5	25.40	36.21	58.19	0.00	10.57
	15/8/2005	14	0	3	17	1.89	4	24.30	36.49	63.61	0.00	10.13
	1/9/2005	12	1	2	15	0.88	6	19.85	33.45	63.75	0.00	9.88
	15/9/2005	12	2	1	15	1.00	6	19.19	30.29	52.49	0.00	10.33
	1/10/2005	22	4	1	27	1.80	7	18.17	30.98	45.75	0.00	13.10
Autumn	15/10/2005	90	0	0	90	3.33	8	15.23	28.63	46.00	0.00	9.11
	1/11/2005	113	0	0	113	1.26	9	14.40	24.93	59.71	0.00	7.76
	15/11/2005	114	1	0	115	1.02	7	12.05	19.50	54.56	0.00	9.05
	1/12/2005	96	0	0	96	0.83	6	10.84	19.29	59.94	2.00	9.95
	15/12/2005	87	0	0	87	0.91	5	6.70	56.23	56.23	0.00	10.82
	01/01/2006	54	2	0	56	0.64	4	7.72	17.55	56.34	3.00	12.10
	Total	870	46	34	950	28	111	372	661	1335	27	263

Table 2: Seasonal abundance of *Ceroplastes cirripediformis* different stages and the total population / leaf on Guava tree; the half monthly variation in relation to climatic factors from mid Jan. 2006 to 1st Jan 2007.

season	Sampling dates	No. of individuals / leaf				H.M.V	Parasite L + P	Climatic Factors				
		Nymph	Ad. Female	Gravid	Total pop.			Temperature		R.H.	Rain fall	wind speed
								Min	Max			
Winter	15/1/2006	41	7	6	54	0.00	10	9.79	19.78	62.65	0	19.72
	02/01/2006	119	8	5	132	2.44	7	8.29	18.55	56.89	3	18.25
	15/2/2006	150	3	4	157	1.19	4	8.71	21.62	56.4	2	11.22
	03/01/2006	21	4	2	27	0.17	3	11.7	23.31	51.18	4	10.88
	15/3/2006	8	1	1	10	0.37	3	8.08	20.64	55.93	0	12.39
	04/01/2006	6	1	2	9	0.90	2	9.78	23.3	52.95	6	18.11
Spring	15/4/2006	3	1	1	5	0.56	2	13.83	27.63	53.61	0	14.64
	05/01/2006	2	0	0	2	0.40	1	15.68	26.19	53.11	4	11.3
	15/5/2006	5	0	0	5	2.50	0	17.57	31.72	50.4	0	11.54
	06/01/2006	4	0	0	4	0.80	1	19.3	31.29	51.59	0	12.28
	15/6/2006	2	2	0	4	1.00	0	22.45	32.46	53.36	0	9.93
	07/01/2006	2	0	0	2	0.50	2	20.59	33.52	52.26	0	11.51
Summer	15/7/2006	3	0	1	4	2.00	2	21.93	33.09	56.4	0	8.96
	08/01/2006	4	0	1	5	1.25	3	22.19	33.59	58.15	0	12.47
	15/8/2006	5	1	2	8	1.60	3	21.71	33.23	59.22	0	8.61
	09/01/2006	9	2	4	15	1.88	4	20.47	32.44	60.9	0	12.91
	15/9/2006	5	5	5	15	1.00	5	19.57	33.14	58.68	0	14.26
	10/01/2006	3	20	6	29	1.93	4	17.49	32.23	56.47	0	10.99
Autumn	15/10/2006	133	12	15	160	5.52	5	15.43	25.67	55.36	0	12.98
	11/01/2006	260	8	9	277	1.73	6	12.62	22.78	57.82	0	9.55
	15/11/2006	358	1	12	371	1.34	3	12.57	25.19	58.02	4	12.99
	12/01/2006	155	1	2	158	0.43	3	13.25	20.25	60.22	0	10.55
	15/12/2006	139	1	1	141	0.89	5	7.94	22.25	59.5	0	13.12
	01/01/2007	97	1	1	99	0.70	6	8.49	20.34	61.9	3	9.87
	Total	1534	79	80	1693	31	84	359	644	1353	26	299

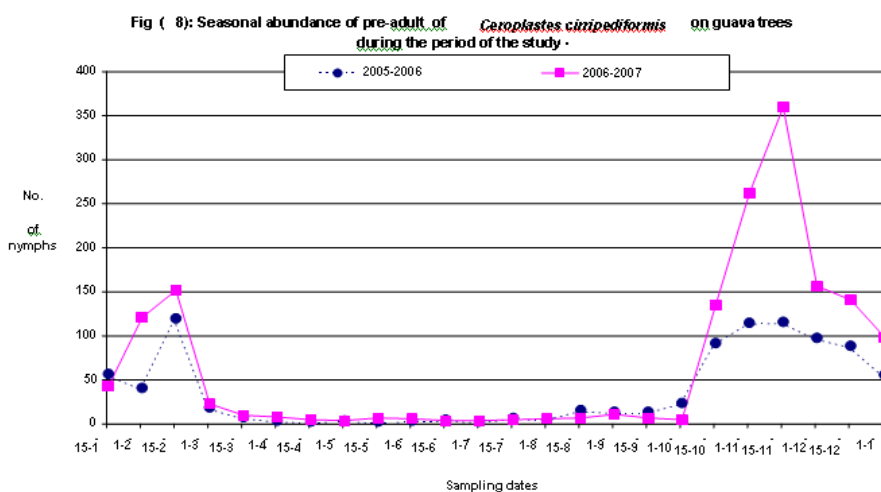


Fig (9) Seasonal abundance of adult females of *Ceroplastes cirripediformis* on guava trees during the period of the study

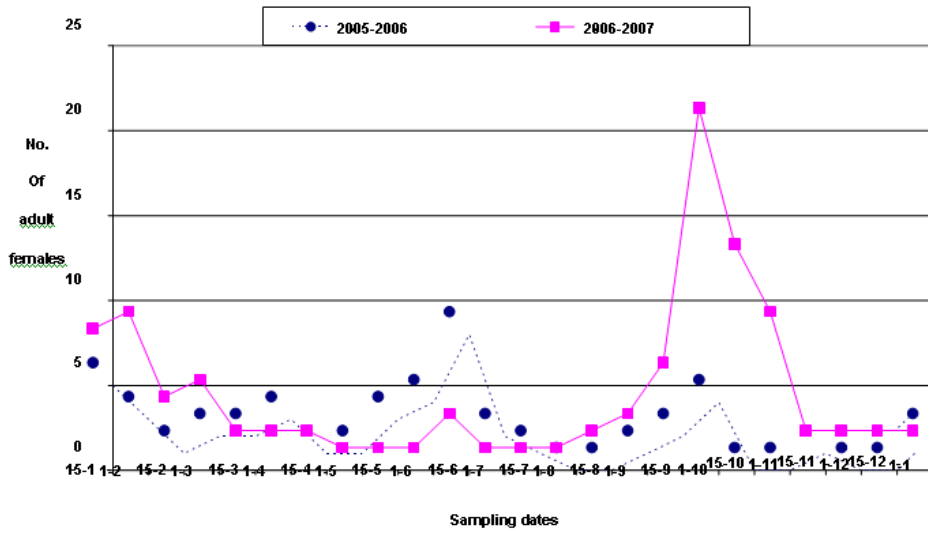


Fig. (10): Seasonal abundance of gravid females of *Ceroplastes cirripediformis* on guava trees during the period of the study .

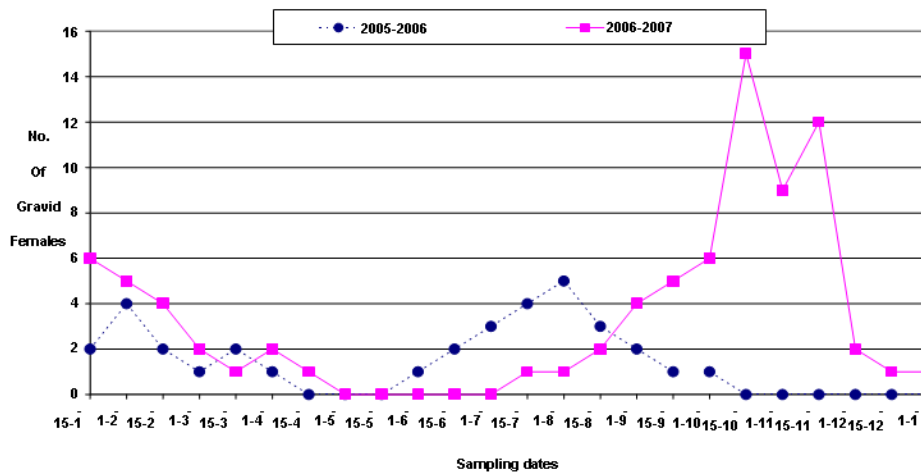


Fig. (11): Seasonal abundance of *Ceroplastes cirripediformis* total population on guava trees during the period of the study .

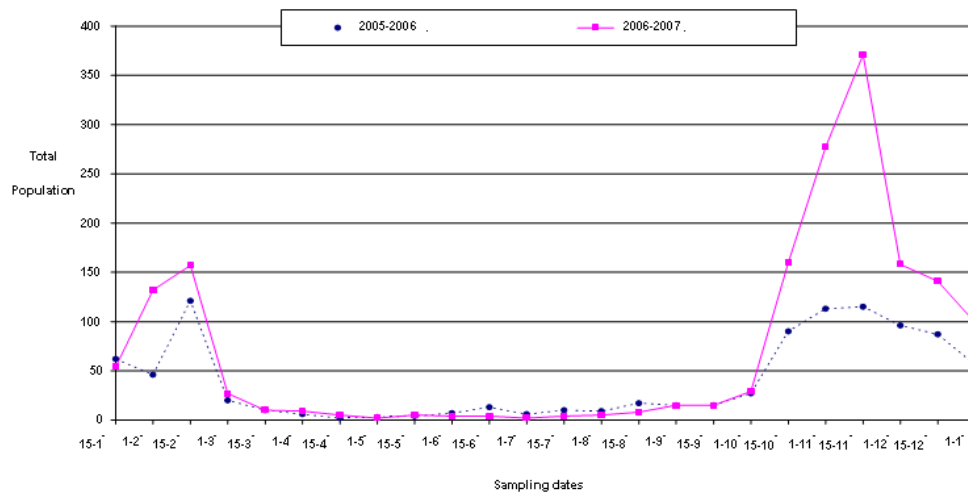


Fig. 12: H.M.V of *Ceroplastis* from mid Jan 2005 to 1st Jan 2006

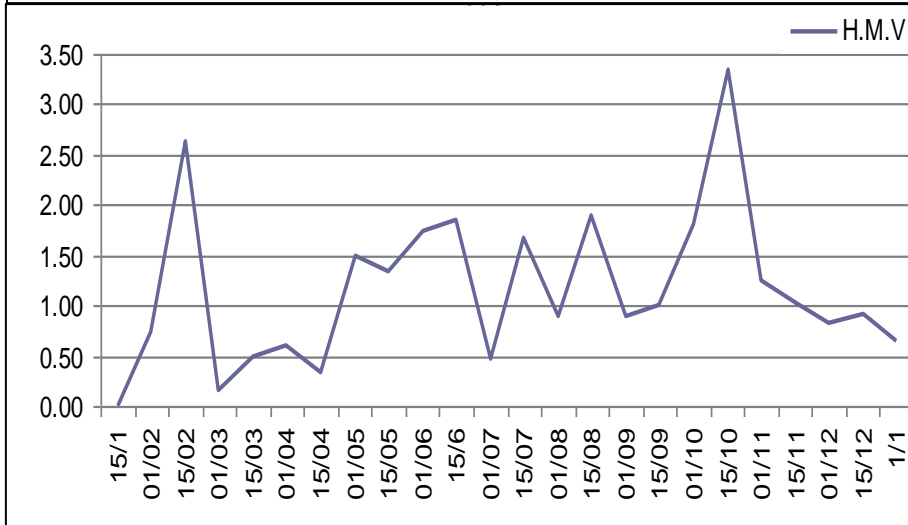
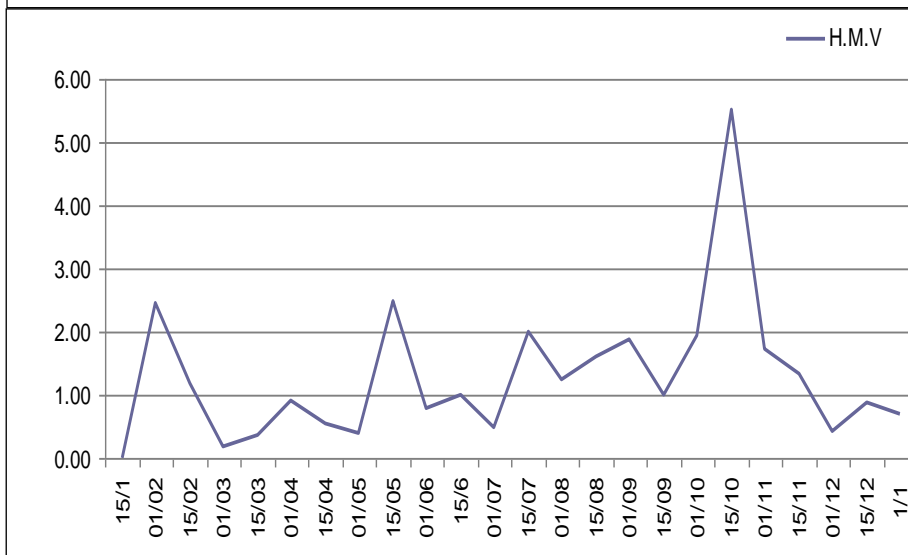


Fig. 13: H.M.V of *Ceroplastis* from mid Jan 2006 to 1st Jan 2007



Number and duration of annual generation *Ceroplastes cirripediformis* on guava trees: The numbers of annual generations of *Cer. cirripediformis* on guava trees at Qaliobiya governorate were estimated, from the data of numbers of nymphal stage throughout the two successive years of study (2005–2006) which revealed the occurrence of two annual generations in each studied year. Polled data concerning the first year were explicated in table (3) declare the time of each generation.

-The first generation: It considered the shortest generation when compared with the other one, originate at the mid of January till 1st July, lasted 5.5 months with the peak with 118, 150 nymphs/leaf at mid February during the two studied years respectively.

The second generation: It was the longest, occurred from mid May till 1st January and stayed 6.5 months with the high peak of 114, 358 at mid November during the two studied years respectively.

Table 3: Number and duration of *Ceroplastes cirripediformis* generation under field conditions during the period of investigation on guava trees at Qaliobiya governorate.

Number of the scale insect/leaf at the peak of generation.	Duration in months	Data from —to	Generations
2005 – 2006			
118	5.5 months	From mid January till 1 st July	1st Generation
114	6.5 months	From 1 st July to mid January	2nd Generation
2006 Season			
150	5.5 months	From mid January to 1st July 2006	1st Generation
358	6.5 months	From 1st July to mid January	2nd Generation

The preceding results which mentioned that this pest had two generation per year are agree with those obtained by Habib *et al.* (1971) who found that *C. floridensis* had two generations annually (May-June) and (September-October). Also El Emery (1995) mentioned that this pest had two annual generations during the two seasons on mandarine trees at Qaliobia governorate.

- Effect of abiotic (climatic) and biotic factors on *Ceroplastes cerripediformis*:

1) Effect of the day maximum temperature (D. Mx .T.): The statistical analysis of data of *Ceroplastes cerripediformis* total population on guava trees in tables (1, 2&4) recorded that significant negative simple correlation with (r.) value 0.576. However, the partial regression indicated positive slightly significant relation with (P. reg.) 0.010.

Table 4: simple correlation and partial regression of six abiotic and biotic factors with their significant level and percentage of explained variance on the population density of *Ceroplastes cirripediformis* population at Qaliobiya governorate during the period of investigation.

Year	Source of variation	Simple correlation		Partial regression		"F" value	E.V%
		R	P	B	T		
2005-2006	MAX. Temp.	-0.576*	-3.98	0.01	-2.888	3.889**	57.90%
	Min. Temp.	-0.263	0.416	0.601	0.533		
	daily meanR.H%	0.124	0.352	0.773	0.293		
	Rainfall	-0.125	-2.473	0.355	-0.95		
	wind speed	-0.417*	-3.932	0.318	-1.029		
	parasite	0.584	4.256	0.134	-1.574		

r = Simple correlation

p = Probability

b = regression

t = T test

E.V. = Explained variance.

2) Effect of the night minimum temperature (N. Mn. T.): The simple correlation relation recorded in the previous tables indicated a negative slightly significant relation with (r.) value -0.263. The partial regression showed a positive slightly significant relation with (P. reg. = 0.601).

3) Effect of the daily mean relative humidity (D. M. R. H): As shown in the same tables, the simple correlation indicated positive slightly significant relation with (r.) values was 0.124. The partial regression showed a positive slightly significant relation during the two year of study with (P. reg. = 0.773).

4) Effect of rain fall: The tables recorded that the simple correlation with negative slightly significant relation with (r.) -0.125 during the two years. However, the partial regression indicated positive slightly significant relation with (P. reg. = 0.355) during the two years of study.

5) Effect of wind speed: In tables (1,2&4). The results indicated a negative significant with (r.) - 0.417. The partial regression showed a positive slightly significant relation during the two studied years with (P. reg. = 0.318).

6) Effect of biotic factor (Parasite): Data in the previous tables showed the effect of parasites on *Ceroplastes cerripediformis* during the two years of study. The simple correlation showed positive significant relation with (r.) value equal 0.584. The partial regression showed a positive slightly significant relation with (P. reg. = 0.134).

7) The combined effect of the six studied factors: The combined effect of the six a biotic and biotic factors on *Ceroplastes cerripediformis* with infest guava trees during two years were highly significant ($F = 3.889$) during the two years of study. However the explained variance presented 57.90 during the two years of study.

From the previous results, it is clear that the parasite has the most effective role in this seasonal fluctuation, followed by the temperature but the combined six previous factors are more effective than any separate one. This ensured the importance of the integrated programs in the pest control management. These results agreement with El-Emery (1995) who mentioned that the population density of the citrus wax scale insect *C. floridensis* was positively correlated with studied abiotic factors.

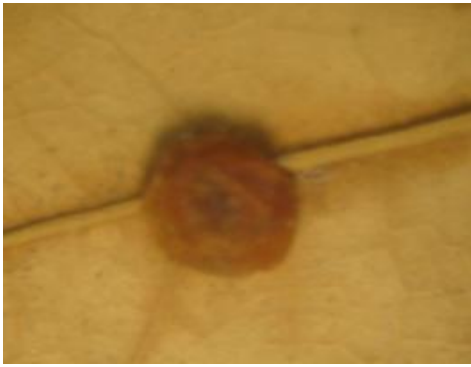
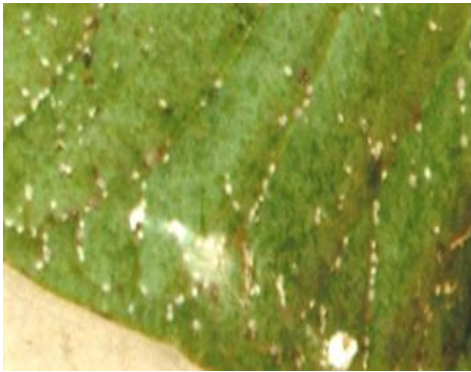


Fig. 1: *Ceroplastes rusci* (L.),



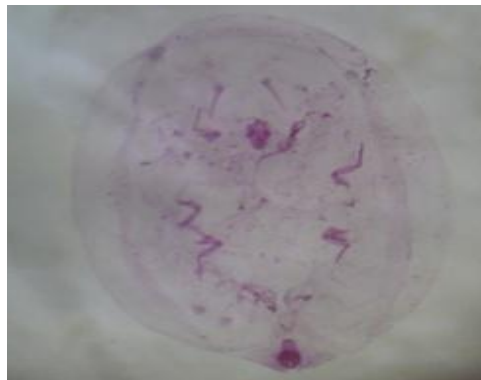
Fig. (2): *Ceroplastes floridensis* Comstock,



Figs. 3: *Ceroplastes cirripediformis* Comstock preadult



Figs. 4: *Ceroplastes cirripediformis* Comstock adult scale



Figs. 5: *Ceroplastes cirripediformis* Comstock, adult female

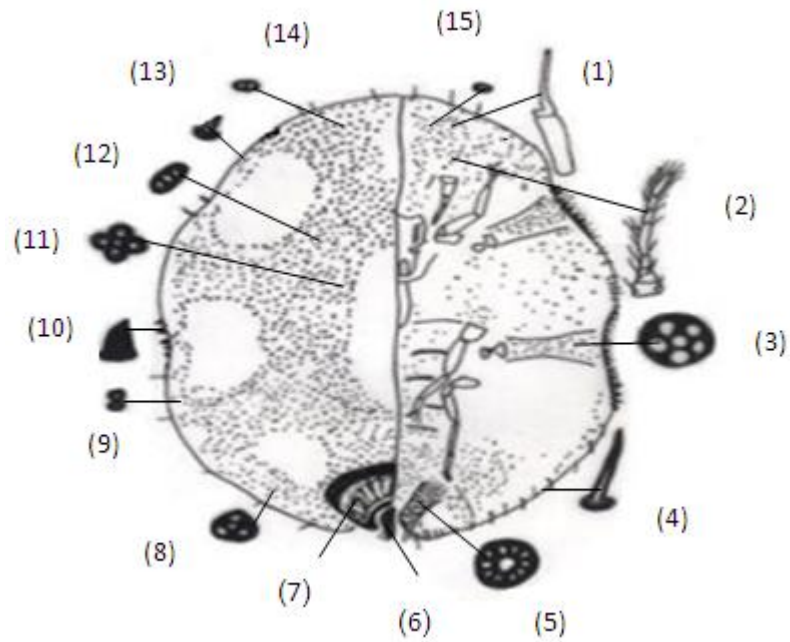


Fig. 6: *Ceroplastes cirripediformis* Comstock adult female, (1) tubular duct,(2): antenna, (3) quercular pore,(4): marginal saeta,(5): multilocular pore,(6): anal plate,(7): anal protuberance,(8): triangular trilocular pore,(9): bilocular pore,(10): capitate seta,(11): bilocular pore,(12): trilocular pore,(13): dorsal seta ,(14):dilocular pore,(15): unilocular pore.

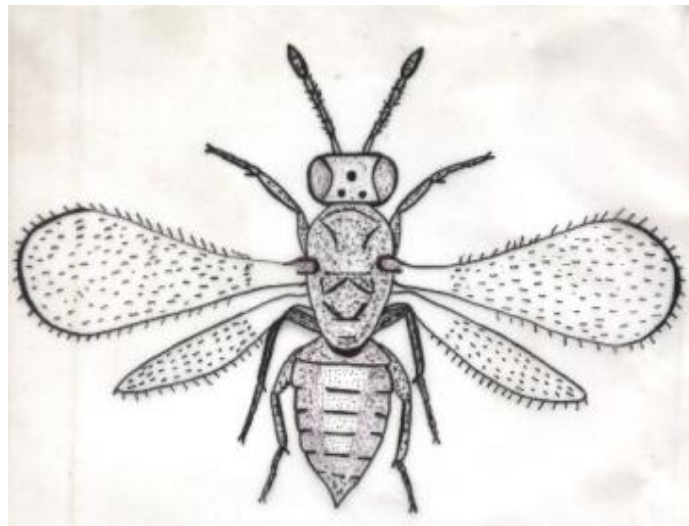


Fig.7:*Tetrastichus ceroplastae* Girault.

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ARABIC SUMMARY

دراسات تصنيفية وبيئية على حشرة الجوافة الشمعية الرخوة *Ceroplastes cirripediformis* Comstock والمسجلة لأول مرة من محافظة القليوبية في مصر.

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نظرا للأهمية الاقتصادية لمحصول ال جوافة حيث أنه من الفواكة المفضلة لدى كثير من المصريين و كذلك الخسائر التي تلحق به عند اصابته بالحشرات القشرية ابتداء من الافرازات السامة التي تفرزها أثناء التغذية وكذلك الفطريات التي تتجمع على الندوة العسلية ومرورا ايضا بتجميعها للحشرات المصاحبة التي توفر لها الحماية حتى تصل الى موت النبات كليا وخسائر فادحة في الانتاج وخاصة عند وصول الافة بشكل كثيف للثمار.

وقد سجل هذا النوع *Ceroplastes cirripediformis* التابع لفصيلة الحشرات القشرية الرخوة (Coccidae) لأول مرة في مصر والتي وصلت أعداده الى 371 فرد لكل ورقة. لذلك تم عمل مفتاح لفصله عن باقي الأنواع المصريه المسجله تحت هذا الجنس مع ذكر الصفات المميزة والرسومات والصور له م. وكذلك تم دراسته التغيرات الموسمييه وعدد الأجيال السنويي لمدة سنتين متتاليتين إبتداء من منتصف يناير 2005 حتى أول يناير 2007 على أشجار جوافه غير معاملة بالمبيدات بزيارة نصف شهرية وقد تم تسجيل فترتين نشاط لهذه الافة في أواخر الشتاء و أثناء الخريف خلال سنتين الدراسة. وسجل لهذه الافة أيضا جيلين في السنة خلال عامي الدراسة للجيل الأول سجل من أول يناير و استمر إلى أول شهر يوليو ثم سجل الجيل الثاني للحشرة وكان هو الأطول حيث استمر حتى نهاية العام.

وأيضا تم دراسة تأثير العوامل الغير حيوية (المناخية) مثل درجة الحرارة القصوى أثناء النهار - درجة الحرارة الصغرى أثناء الليل و المتوسط اليومي للرطوبة و الأمطار وكذلك سرعة الرياح على نشاط الافة ، وتم أيضا تعريف ووصف مع الرسم للطفيل *Tetrasticus ceroplastae* ودراسة اثره مع العوامل الجوية السابقة على نشاطها أيضا. ولقد أوضحت التحاليل الاحصائية أن للطفيل أكبر تأثير ويلية الحرارة أما أثر العوامل مجتمعة فلها الدور الأعظم وهذا يبرز أهمية مراعاة مجموعة من المؤثرات وخاصة أثناء المقاومة المتكاملة لهذه الافة.