

**MONITORING THE DATE-PALM FROND BORER *PHONAPATE FRONTALIS* FAHRAEUS (COLEOPTERA: BOSTRYCHIDAE)
A PEST RECENTLY THREATENING GRAPE VINEYARDS IN EGYPT**

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Abstract

The date-palm frond borer *Phonapate frontalis* Fahraeus (Coleoptera: Bostrychidae), attacking grapevine trees for the first time, were monitored in vineyards during the three successive years (2004, 2005 and 2006). Monitoring the population fluctuation was carried out at Giza and Behera governorates. The rate of infestation approximated 17.17%, while the degree of infestation reached 0.91 beetles per tree. The seasonal abundance of the adult beetles prevailed from late May or beginning of June to October with one or two flight peaks. The major beetles' flight period was in summer months (July-September) (0.59 - 0.88 beetles / tree), while spring and autumn were the minor (0.03 - 0.06 beetle / tree), however its activity stopped during winter. The total numbers per year were 0.67 - 0.99 beetles/tree. There were one definite brood of beetles' activity in Behera governorate, while one to two broods were recorded in Giza governorate. There were 4 - 5.5 months of beetles' activity. Effect of weather factors on the borers activity was mostly positively significant with daily maximum, daily minimum, and daily mean temperatures but mostly negative and insignificant with daily mean relative humidity. Infestation was almost doubled during only one year, and thrice during two years, thus needed urgent integrated control.

INTRODUCTION

The date-palm frond borer *Phonapate frontalis* is one of the most economically important Bostrychid borers on date palm in Egypt (Andres, 1931, Nour, 1963, Helal and El-Sebay, 1994, Batt and Girgis, 1996 and Morad 1996). Also, *Phonapate frontalis* Mars. was reported by Helal (1986) on *Phoenix* sp. At Giza, Fayoum, Beni Suef, Minia, Assiut, Sohag, Quena and Aswan. Moreover, *Phonapate frontalis arabs* Lesne was recorded all over the world (López Colón, 1998, and Guerrieri and Noyes 2005). On the other hand, Alferii (1976) collected *Phonapate frontalis uncinata* Karsch in April (Cairo), May (Behera), July (Suez Gulf), and August (Alexandria) from mango tree stems, and in April (Assiut) from date palm leaves. Batt and Gerges (1996) studied the biology and seasonal activity of *Phonapate frontalis* Fahr. on mango trees. They recorded peach trees as host plant in North Sinai. Also tamarisk trees was a wooden tree host. The population fluctuation of *Ph. frontalis* was studied by a light trap catch in Giza region, Egypt by Azmy *et al.* (1978) and Khattab *et al.* (1981). El-Assal (2004) found that *Ph. frontalis* mainly attacks descendingly the following date palm varieties,

Zhaglol, Males, Samani, Hayiani, Sewi, Manthour and Amhat. He added that infestation was found in Ismailia, Behera, Qalubia, Giza and Fayoum governorates.

Talhok (1970) stated that grubs and adults attack weak palm wood, particularly the fronds, and attacked fronds may break up in a heavy wind. Also, poor management, in the form of no pruning, lack or excess of irrigation will also predispose trees to borer attacks. Bitaw and Ben Saad (1990) added that *Ph. frontalis* severely infests the mid-rib of vigor, semi-dry and dry date palm leaves as well as fruiting branches. Adult beetles' bore tunnels in which they oviposit eggs. In case of vigor leaves, sometimes gum exudates. Larvae are the most destructive stage and consumed large amount of the inner leave tissues. This boring insect also attacks the base of the fruit bunches and causes their breakage and reduces production.

Recent frequent field observations all over the governorates of Egypt indicated that *Ph. frontalis* was recorded for the first time in vineyards at Behera, Giza, Qalubia, and Dākahliā governorates mainly in newly reclaimed desert lands.

Successful integrated pest control (IPC) depends largely on monitoring studies especially the seasonal fluctuations of beetles' population, the progress of infestation, the seasonal cycle, and the effect of the main weather factors. Moreover, IPC of *P. frontalis* should be included in the General IPM of the other pests in vineyards. In an attempt to contribute to such a gap in the knowledge, the present comparative ecological studies are aimed.

MATERIALS AND METHOD

Grapevine yards located in newly reclaimed desert lands, at south of Wadi El-Natroun district, Giza governorate and Khatatba district, Behera governorate were subjected to monitoring studies of *P. frontalis*.

Monitoring studies were carried out during three successive years extending from early January 2004 until late December 2006. No specific chemical treatments were applied in the selected areas throughout the studies.

1. Rate and Degree of infestation

The rate of infestation was assessed by the percentage of numbers of randomly distributed infested trees with *P. frontalis* in grapevine yards each year. The degree of infestation was estimated by the mean number of adult beetles per tree (indicated by the newly exit holes) that completed their life cycle and emerged from grapevine trees each year. Estimation of degree of infestation was carried out on 100 trees taken randomly.

2. Population fluctuation of *P. frontalis* in vineyards

Two grapevine yards infested with *P. frontalis*, the first at Wadi El-Natroun, Giza and the other at Khatatba, Behera were selected for population fluctuation studies. Grapevine yards were about five feddans in area and trees were approximately more than 5 years old.

2.1. Seasonal abundance

A paint marker with a brush was used to cancel the old holes on 100 infested trees randomly distributed in each vineyard. From January 1, 2004 until December 31, 2006, the new exit holes - indicating emergence of beetles were counted at half-monthly intervals on the 15th and last day of every month. To avoid repeated counting new exit holes were immediately canceled with a paint marker after counting.

To smooth the frequency distribution curve to an almost normal curve, data were calculated according to the following formula:

$$\{(2 \times \text{the actual number}) + \text{the previous number} + \text{the following number}\} / 4$$

2.2. Progress of infestation and seasonal cycle

Data of the seasonal abundance were accumulated from January 1, 2004 until December 31, 2006 for each half-monthly interval. The total number of beetles represented the accumulated number for the three years together.

The presented Figures indicated the periods of the seasonal cycles of beetles activity and inactivity. Progress of infestation also indicated the rate of increase in the borer infestation year after another.

3. Effect of weather factors on the activity of the grapevine tree borers

Four main weather factors, the daily maximum temperature (DMxT), daily minimum temperature (DMnT), daily mean temperature (DMT) and daily mean relative humidity (DMRH) were considered. Necessary weather data were obtained from the Central Laboratory of Climate and Meteorology, ARC, MOA, Giza.

Population data of the boring insect pest and the meteorological data, both at half-monthly intervals, were presented.

The relationship between the four weather factors and the target insect during the activity season was investigated for three successive years extending from January 2004 until December 2006 in the grapevine yards.

To determine the direct effect of each weather factor on the insect activity, population counts were plotted against the corresponding weather data. The simple correlation coefficients "r" between each weather factor and the insect population was calculated according to Snedecor and Cochran (1990).

RESULT AND DISCUSSION

1. Rate and Degree of infestation

Data presented in table (1) indicated that the rate of infestation (the percentage of infested trees with *P. frontalis*) in grapevine yards each year in both districts was rather high (17.17%). In Behera, the rate of infestation was 12 – 19 % (mean, 15.33%), but it was higher in Giza, 17 – 22% (mean, 19%). The degree of infestation (the number of emerged adult beetles per tree indicated by the newly exit holes) showed general mean of 0.91 beetle per each tree in the two localities. The degree of infestation in Giza was higher (range, 0.88 – 1.24 and mean, 1.09 beetles per tree) than in Behera (range, 0.57 – 0.90 and mean, 0.73 beetle per tree).

Table 1. Rate and degree of *P. frontalis* infestation in grapevine yards at Behera and Giza governorate during 2004, 2005 and 2006 activity seasons.

Year		2004	2005	2006	Mean
Rate of infestation (%)	Behera	12	15	19	15.33
	Giza	17	18	22	19
	Grand Mean	14.5	16.5	20.5	17.17
Degree of infestation (number of holes/tree)	Behera	0.57	0.73	0.90	0.73
	Giza	0.88	1.16	1.24	1.09
	Grand Mean	0.725	0.945	1.07	0.91

2. Population fluctuation of *P. frontalis* in grape vineyards

2.1. Seasonal abundance

Tables (2, 3 and 4) and Figure (1) show the seasonal abundance of *P. frontalis* during 2004, 2005 and 2006 seasons of beetle's activity. Beetle's emergence prevailed during the period extended from late May / June to October in grapevine yards at Giza and Behera governorate during the three tested seasons.

In Giza governorate, beetles started to emerge during the 2nd half of May (0.01 beetles / tree) in 2005, 1st half of Jun. (0.02 beetles / tree) in 2004, or the 2nd half of Jun. (0.05 beetles / tree) in 2006. Beetles started to emerge later in Behera governorate, where the commencement dates were during the 1st half of Jun. (0.02 beetles / tree) in 2005, and the 2nd half of Jun. (0.03 and 0.04 beetles / tree) in 2004 and 2006, respectively.

One or two flight peaks of *P. frontalis* were recorded in grapevine yards. In Giza governorate, two peaks were found during the 1st half of July (0.14 beetles / tree) and the 2nd half of September (0.19 beetles / tree), 2005 and 1st half of August (0.16 beetles / tree) and the 2nd half of September (0.22 beetles / tree), 2006 but the only one peak was found during the 1st half of September, 2004 (0.18 beetles / tree). In Behera governorate only one peak was recorded during the 1st half of August, 2004 (0.16 beetles / tree), 2nd half of August, 2005 (0.19 beetles / tree) or 1st half of September, 2006 (0.21 beetles / tree).

In Giza governorate, beetles always stopped emergence during the 2nd half of October (0.01, 0.02 and 0.03 beetles / tree during 2004, 2005 and 2006 seasons, respectively). The last beetle flight in Behera governorate was somewhat earlier during the 1st half of October (0.05 and 0.03 beetles / tree during 2005 and 2006, respectively), while it was during the 2nd half of October, 2004.

It was concluded that the major beetles' flight was in summer months (July-September). A respective maximum beetles' flight of 0.75, 0.79 and 0.83 beetles / tree

Table 2. Mean number of *P. frontalis* beetles in grapevine yards at Giza governorate during 2004, 2005 and 2006 seasons.

Date of inspection		Mean no. of beetles \ tree								
		2004 season			2005 season			2006 season		
		Actual	S	C	Actual	S	C	Actual	S	C
Jan.	1-15	0.0	0.0	0.0	0.0	0.0	0.87	0.0	0.0	1.81
	16-31	0.0	0.0	0.0	0.0	0.0	0.87	0.0	0.0	1.81
Feb.	1-15	0.0	0.0	0.0	0.0	0.0	0.87	0.0	0.0	1.81
	16-29	0.0	0.0	0.0	0.0	0.0	0.87	0.0	0.0	1.81
Mar	1-15	0.0	0.0	0.0	0.0	0.0	0.87	0.0	0.0	1.81
	16-31	0.0	0.0	0.0	0.0	0.0	0.87	0.0	0.0	1.81
Winter		0.0			0.0			0.0		
Apr.	1-15	0.0	0.0	0.0	0.0	0.0	0.87	0.0	0.0	1.81
	16-30	0.0	0.0	0.0	0.0	0.0	0.87	0.0	0.0	1.81
May	1-15	0.0	0.0	0.0	0.0	.003	0.87	0.0	0.0	1.81
	16-31	0.0	.005	0.0	0.01	.008	0.88	0.0	0.0	1.81
Jun.	1-15	0.02	.02	0.02	0.02	.02	0.90	0.00	.013	1.81
	16-31	0.04	.043	0.06	0.03	.035	0.93	0.05	.048	1.86
Spring		0.06			0.06			0.05		
Jul.	1-15	0.07	.075	0.13	0.06	.073	0.99	0.09	.1	1.95
	16-31	0.12	.11	0.25	0.14	.113	1.13	0.13	.123	2.08
Aug.	1-15	0.13	.13	0.38	0.11	.105	1.24	0.16	.135	2.24
	16-31	0.14	.13	0.52	0.13	.133	1.37	0.10	.125	2.34
Sep.	1-15	0.18	.153	0.7	0.16	.16	1.53	0.14	.15	2.48
	16-30	0.11	.113	0.81	0.19	.153	1.72	0.21	.165	2.69
Summer		0.75			0.79			0.83		
Oct.	1-15	0.05	.055	0.86	0.7	.088	1.79	0.08	.103	2.77
	16-31	0.01	.015	0.87	0.02	.028	1.81	0.03	.035	2.80
Nov.	1-15	0.0	.003	0.87	0.0	.005	1.81	0.0	.008	2.80
	16-30	0.0	0.0	0.87	0.0	0.0	1.81	0.0	0.0	2.80
Dec.	1-15	0.0	0.0	0.87	0.0	0.0	1.81	0.0	0.0	2.80
	16-31	0.0	0.0	0.87	0.0	0.0	1.81	0.0	0.0	2.80
Autumn		0.06			0.09			0.11		
Grand Total		0.87		0.87	0.94		1.81	0.99		2.80
Mean / month		0.0725			0.0783			0.0825		

S: Smoothed mean no. of beetles \ tree

C: Cumulative mean no. of beetles \ tree

Table 3. Mean number of *P. frontalis* beetles in grapevine yards at Behera governorate during 2004, 2005 and 2006 seasons.

Date of inspection		Mean no. of beetles \ tree								
		2004 season			2005 season			2006 season		
		Actual	S	C	Actual	S	C	Actual	S	C
Jan.	1-15	0.0	0.0	0.0	0.0	0.0	0.67	0.0	0.0	1.43
	16-31	0.0	0.0	0.0	0.0	0.0	0.67	0.0	0.0	1.43
Feb.	1-15	0.0	0.0	0.0	0.0	0.0	0.67	0.0	0.0	1.43
	16-29	0.0	0.0	0.0	0.0	0.0	0.67	0.0	0.0	1.43
Mar	1-15	0.0	0.0	0.0	0.0	0.0	0.67	0.0	0.0	1.43
	16-31	0.0	0.0	0.0	0.0	0.0	0.67	0.0	0.0	1.43
Winter		0.0			0.0			0.0		
Apr.	1-15	0.0	0.0	0.0	0.0	0.0	0.67	0.0	0.0	1.43
	16-30	0.0	0.0	0.0	0.0	0.0	0.67	0.0	0.0	1.43
May	1-15	0.0	0.0	0.0	0.0	0.0	0.67	0.0	0.0	1.43
	16-31	0.0	0.0	0.0	0.0	.005	0.67	0.0	0.0	1.43
Jun.	1-15	0.0	.008	0.0	0.02	.015	0.69	0.0	0.01	1.43
	16-31	0.03	.033	0.03	0.02	.275	0.71	0.04	.04	1.47
Spring		0.03			0.04			0.04		
Jul.	1-15	0.07	.07	0.10	0.05	.058	0.76	0.08	.083	1.55
	16-31	0.11	.113	0.21	0.09	.095	0.85	0.13	.128	1.68
Aug.	1-15	0.16	.133	0.37	0.15	.145	1.00	0.17	.16	1.85
	16-31	0.10	.113	0.47	0.19	.16	1.19	0.17	.18	2.02
Sep.	1-15	0.09	.085	0.56	0.11	.123	1.30	0.21	.178	2.23
	16-30	0.06	.06	0.62	0.08	.8	1.38	0.12	.12	2.35
Summer		0.59			0.67			0.88		
Oct.	1-15	0.03	.035	0.65	0.05	.045	1.43	0.03	.045	2.38
	16-31	0.02	.018	0.67	0.0	0.01	1.43	0.0	.008	2.38
Nov.	1-15	0.0	.005	0.67	0.0	0.0	1.43	0.0	0.0	2.38
	16-30	0.0	0.0	0.67	0.0	0.0	1.43	0.0	0.0	2.38
Dec.	1-15	0.0	0.0	0.67	0.0	0.0	1.43	0.0	0.0	2.38
	16-31	0.0	0.0	0.67	0.0	0.0	1.43	0.0	0.0	2.38
Autumn		0.05			0.05			0.03		
Grand Total		0.67		0.67	0.76		1.43	0.95		2.38
Mean / month		0.056			0.063			0.079		

S: Smoothed mean no. of beetles \ tree

C: Cumulative mean no. of beetles \ tree

were in Giza governorate, and 0.59, 0.67 and 0.88 beetles / tree were in Behera governorate during the three years of study, respectively.

Spring (April-June) and autumn (October-December) months showed minimum and almost equal beetles' flight. In spring, the beetles' flight were 0.06, 0.06 and 0.05 beetles / tree at Giza governorate, and 0.03, 0.04 and 0.04 beetles / tree were at Behera governorate during 2004, 2005 and 2006 seasons, respectively. In autumn, the beetles' flight were 0.06, 0.09 and 0.11 beetles / tree at Giza governorate, while they were 0.05, 0.05 and 0.03 beetles / tree in Behera governorate during the three tested years, respectively. Beetles activity was stopped during winter months (January-March).

Moreover, in Giza governorate, the total numbers of beetles emerged during the whole year were 0.87, 0.94 and 0.99 beetles / tree in 2004, 2005 and 2006 seasons, respectively. In Behera governorate, the respective total numbers of emerged beetles were 0.67, 0.76 and 0.95 beetles / tree. The means / month were 0.0725, 0.0783 and 0.0825 beetles / tree in Giza governorate, while they were 0.0558, 0.0633 and 0.0792 beetles / tree in Behera governorate.

Smoothed data presented in Tables (2 & 3) and Figures (1 & 2) emphasize that, in Behera governorate, *P. frontalis* had one definite brood of beetles' activity prevailed from the 1st half of June to the 1st half of November, 2004 and 2006, or from the 2nd half of May to the 2nd half of October, 2005. In Giza governorate, *P. frontalis* had one brood of beetles' activity during 2004 from the 2nd half of May to the 1st half of November. During 2005 and 2006, the pest had two broods. The respective first brood was from 1st half of May to 1st half of October and 1st half of June to 2nd half of October, while the second was from 1st half of July or 1st half of August to 1st half of November, 2005 and 2006.

2.2. Progress of infestation and seasonal cycle

The cumulative numbers (seasonal cycle) of emerged beetles (Tables, 2 and 3) were 4.5, 5, and 5.5 months of beetles activity followed by 7.5, 7 and 6.5 months of beetles inactivity in Giza governorate, during 2006, 2004 and 2005 seasons, respectively. In Behera governorate, the seasonal cycle of emerged beetles consisted of 4, 4.5, and 4.5 months of beetles activity followed by 8, 7.5 and 7.5 months of beetles inactivity during 2006, 2004 and 2005 seasons, respectively.

Infestation was almost doubled during only one year (from 0.87 and 0.67 beetles / tree in Giza and Behera governorates during 2004 to 1.81 and 1.43 beetles during 2005). After three years, infestation almost thrice from 0.87 and 0.67 beetles / tree in Giza and Behera governorates during 2004 to 2.80 and 2.38 beetles / tree /

year during 2006). This serious parameter imposed urgent need of controlling such pest.

Table 4. Commencement, peak, last dates, and broods of *P. frontalis* beetles in grapevine yards at Giza and Behera governorate during 2004, 2005 and 2006 seasons.

Statement	Locality	Year			
		2004	2005	2006	
Flight	Giza	1 st half of Jun.	2 nd half of May	2 nd half of Jun.	
	Behera	2 nd half of Jun.	1 st half of Jun.	2 nd half of Jun.	
Commencement					
Peaks	Giza	1 st	1 st half of Sep.	1 st half of Jul.	1 st half of Aug.
		2 nd		2 nd half of Sep.	2 nd half of Sep.
	Behera		1 st half of Aug.	2 nd half of Aug.	1 st half of Sep.
Last flight	Giza	2 nd half of Oct.	2 nd half of Oct.	2 nd half of Oct.	
	Behera	2 nd half of Oct.	1 st half of Oct.	1 st half of Oct.	
Broods	Giza	1 st	2 nd half of May to 1 st half of Nov.	1 st half of May to 1 st half of Oct.	1 st half of Jun. to 2 nd half of Oct.
		2 nd		1 st half of Jul. to 1 st half of Nov.	1 st half of Aug. to 1 st half of Nov.
	Behera		1 st half of Jun. to 1 st half of Nov.	2 nd half of May to 2 nd half of Oct.	1 st half of Jun. to 1 st half of Nov.

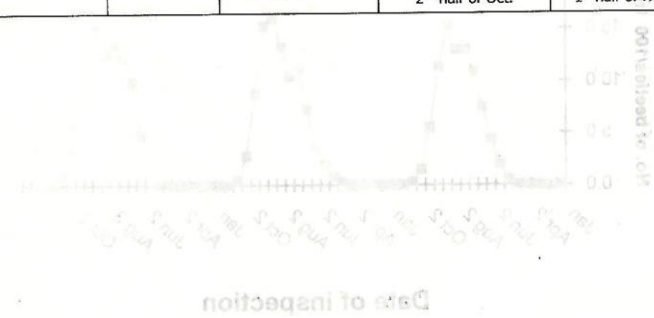


Figure 1: Smoothed mean numbers of *Phonapate. frontalis* beetles in grape vineyards at Behera governorate during 2004, 2005 and 2006.

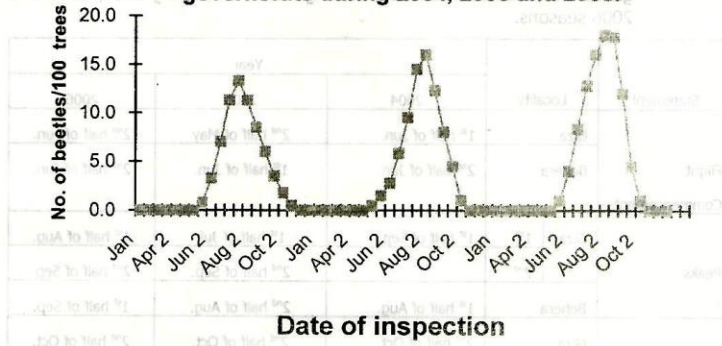
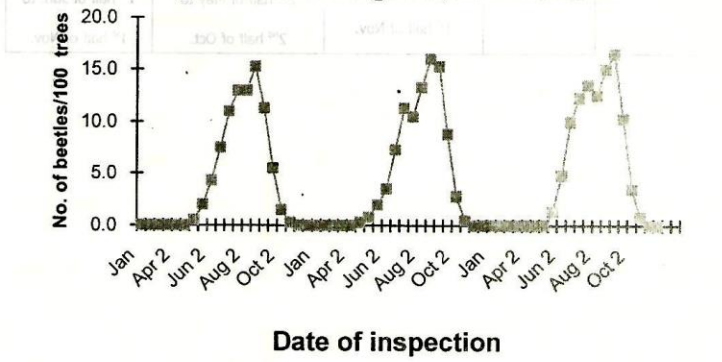


Figure 2: Smoothed mean numbers of *Phonapate. frontalis* beetles in grape vineyards at Giza governorate during 2004, 2005 and 2006.



3. Effect of temperature and relative humidity on beetles activity

Statistical analysis revealed that the fluctuation in *P. frontalis* beetles population was significant and positively correlated with the temperature in the three years of study whether DMxT ("r" value from 0.7513 to 0.8262) or DMnT ("r" value from 0.80174 to 0.8636) or DMT ("r" value from 0.7781 to 0.8467). On the contrary, the effect of DMRH on beetles' population was insignificant and negative where "r" value ranged between - 0.3163 and - 0.0918, but it was significant and positive during 2005 in Behera governorate ("r" value 0.3257).

4. Discussion and conclusion:

Monitoring studies (especially the seasonal fluctuation in pest population, progress of infestation, seasonal cycle, and effect of the main weather factors on the target pests) are essential in planning successful and effective "Integrated Control Programs" for the management of pests.

According to Andres, 1931, Nour, 1963, Helal, 1986, Helal and El-Sebay, 1994, Batt and Girgis, 1996, Morad 1996 and El-Assal, 2004 the date-palm frond borer *Phonapate frontalis* (Coleoptera: Bostrychidae), was long ago known to infest only the mid-rib of vigor, semi-dry and dry leaves as well as fruiting branches of date-palm trees in Egypt. Mango, peach and tamarisk trees were also infested with this pest in Egypt (Alferii, 1976, and Batt and Gerges, 1996).

Nowadays, survey studies in grapevine yards indicated that *P. frontalis* became an economically important boring pest in Egypt. This may be due to the wide spread of several imported new varieties, which are more susceptible to this pest that was mainly confined to the date palm trees.

The rate and degree of infested grapevine trees in Behera and Giza governorates approximated 17.17% and 0.91 beetles per tree, respectively.

In grapevine yards, beetles activity started from late May / June. Emergence was stopped during October with one or two flight peaks. The main activity season was summer, but few in spring and autumn and stopped during winter. The total numbers of beetles emerged during the whole year round were 0.67 - 0.99 beetles/tree. The activity season extended from 4 to 5.5 months. There was one definite brood of the borer activity in Behera governorate, but one to two broods were recorded in Giza governorate. Infestation was almost doubled during only one year, and thrice during two year, thus needed urgent integrated control.

Generally, there were positive and significant effects of major weather factors, daily maximum, daily minimum, and daily mean temperatures on the borers' activity, but this effect was mostly negative and insignificantly with daily mean relative humidity.

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متابعة تعداد حفار سنف وعراجين النخيل

Phonapate Frontalis Fahraeus (Coleoptera: Bostrychidae)

كأفة حديثة تهدد كروم العنب في مصر

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تم تتبع نشاط آفة حفار سنف وعراجين النخيل *Phonapate frontalis* ذات الأهمية الاقتصادية على أوراق وعراجين النخيل، والتي وجدت في السنوات الأخيرة تهاجم بشدة أشجار العنب في كروم العنب في محافظة البحيرة والجيزة علي مدار ثلاثة أعوام متتالية (٢٠٠٤، و٢٠٠٥، و٢٠٠٦). تعمل الخنافس أنفاقاً تضع فيها البيض الذي يفقس إلى يرقات تحفر أنفاقاً تتغذى فيها على المحتويات الداخلية للخشب فتتلفها وتحولها إلى مسحوق من نشارة الخشب، كما نترك عليها نقوب هي مظهر الإصابة الخارجي. تتواجد اليرقات داخل سوق وأزراع الأشجار طوال العام، أما الحشرات الكاملة فتتواجد خلال أواخر الربيع والصيف وبداية الخريف. ويتواجد هذا الحفار في محافظات البحيرة والجيزة ونادراً في القليوبية والدقهلية.

يبدأ النشاط الموسمي للخنافس من أواخر مايو / يونيو إلى أكتوبر، ولها قمة واحدة أو قمتان للنشاط. سجلت شهور الصيف (يوليو - سبتمبر) أعلى نشاط للحشرات (٠,٥٩ - ٠,٨٨ حشرة / شجرة) في حين كان أقل نشاط في الربيع والخريف (٠,٠٣ - ٠,٠٦ حشرة / شجرة)، وتوقف النشاط في الشتاء. بلغ إجمالي تعداد الحشرات التي خرجت من الشجرة خلال العام ما بين ٠,٦٧ و ٠,٩٩ حشرة. وللحفار حضنة واحدة فقط من النشاط خلال العام في محافظة البحيرة، في حين أمكن تحديد ١ - ٢ حضنة في محافظة الجيزة. وبلغت دورة نشاط الحشرات مدة ٤ - ٥,٥ شهر. لوحظ أن تأثير العوامل الجوية علي نشاط الحفار موجب ومعنوي في معظم الأحوال مع درجات الحرارة الصغرى والمتوسطة والعظمى، ولكنها غالباً سالبة وغير معنوية مع متوسط الرطوبة النسبية.

وقد تضاعفت الإصابة بالحفار خلال عام واحد، في حين ازدادت ثلاث مرات خلال عامين فقط، مما يستوجب إجراء برنامج سريع ومكثف للمكافحة المتكاملة للحفارات علي أشجار العنب في كروم العنب.