SEASONAL FLIGHT ACTIVITY OF *SCOLYTUS AMYGDALI* GUER ON APRICOT TREES BY USING TRAP LOGS AT FAYOUM GOVERNORATE

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ABSTRACT:

Seasonal flight activity of the scolytid, *Scolytus amygdali* was studied by using trap logs on apricot trees at Fayoum Governorate, during the two seasons 2002 and 2003. It was noticed that in 2002 year, the first occurrence of beetles was around mid March, where the mean number of trapped beetles was (1 beetle/trap) at daily mean temperature 19.8^{o}C and 62% R.H. The beetles had four peaks, the first peak was (4 beetles/trap) in mid June, the 2nd peak was (7 beetles/trap) in late July, the 3rd peak was (5.8 beetles/trap) in mid September and the 4th peak was (9.4 beetles/trap) in mid November.

In 2003 year, the beetles appeared in late March by (1.4 beetles/trap) at 17.6^{o}C and 58% R.H. The beetles had three peaks, the 1st peak was (1.8 beetles/trap) in late May, the 2nd peak was (4.4 beetles/trap) in late July and the 3rd peak was (10.4 beetles/trap) in mid November.

Simple correlation between temperature and seasonal flight activity was highly significant while it was insignificant between relative humidily and seasonal flight activity during the two seasons 2002 and 2003 years.

Key words: *Scolytus amygdali*- Apricot- Ecology- Trap logs.

INTRODUCTION

The coleopterous wood boring beetles comprise the most important group of injurious insect pests causing extensive and harmful damage to fruit trees. Girgis (1987) recorded that the almond bark beetle, *Scolytus amygdali* Guer (Coleoptera: Scolytidae) attacks the weakened trees, the recent parts which had fallen and cutting parts. On the other hand the vigorous growing trees are more resistant to the attacks, but any external or internal factors that cause weakening of the tree would increase the vulnerability to attack by the bark beetles.

The purpose of the present work were conducted to evaluate trap logs of apricot branches for measure seasonal flight activity as an attractant material to bark beetles *Scolytus amygdali* and to monitor beetles by its entrance holes.

MATERIAL AND METHODS:

The present work was studied at Ibshawai district, Fayoum Governorate, Egypt from mid January to late December, during two year seasons of 2002 and 2003.

Fifteen healthy cutting (25 cm x 3 cm diam) of apricot trees were used as trap logs. The healthy cutting logs (Free insect infestation) were collected and their extremes were covered by melted wax to reduce dryness.

Every cutting log was tied by string and hanged on the crown of the apricot tree (three cuttings / tree) at the height of 1-2 m from the ground. The traps have no contact with the trunk.

Every trap was replaced with newly one every two weeks, the removed cuttings were transferred to the laboratory, and entrance holes were counted.

The data were analysed by simple correlation between both of mean temperature and relative humidity and seasonal flight activity.

RESULTS AND DISCUSSION:

Data given in Table (1), and illustrated in Figs (1) and (2), represent the seasonal flight activity of *S. amygdali* shown as biweekly number of the holes caused by adult beetles which infest the trap in Fayoum Governorate, Egypt during 2002 and 2003 seasons.

Table (1). Measure of seasonal flight activity by using trap logs, as an attractant material to bark beetles (*S. amygdali*) and to monitor beetles by its entrance holes at Ibshawai district, Fayoum Governorate, Egypt during 2002 and 2003 years.

Sampling data	2002			2003		
	Mean number of holes per trap log	Mean weather factors		Mean number of holes per trap log	Mean weather factors	
		Temp ˚C	R.H.%		Temp ˚C	R.H.%
15/1	0	12.8	66	0	17.3	64
30/1	0	14.2	65	0	15.9	61
15/2	0	16.7	64	0	14.3	58
28/2	0	17.4	62	0	15.2	58
15/3	1	19.8	62	0	17.1	58
30/3	0.8	23.4	56	1.4	17.6	58
15/4	0.8	26.8	51	1.2	24.2	55
30/4	1.2	23.2	54	1.6	23.7	55
15.5	0.4	26.6	52	0.8	28.9	51
30.5	3.2	27.5	54	1.8	29.9	51
15/6	4	29.6	55	0.8	30.6	53
30/6	2	29.9	57	2	32.1	53
15/7	4	32.8	57	3	31.6	54
30/7	7	33.4	56	4.4	31.9	55
15/8	5.4	32.4	58	3.6	31.5	56
30/8	3.6	30.9	58	3.8	32.6	65
15/9	5.8	31.1	56	4.4	30.7	58
30/9	5.6	30.3	55	6.2	27.3	60
15/10	3.8	27.4	57	7.8	26.1	60
30/10	8.2	25.1	63	9.6	26.2	57
15/11	9.4	22.4	61	10.4	23.1	62
30/11	5.2	20.9	60	6.6	19.9	65
15/12	2.6	17.7	61	1.6	18.2	61
30/12	0	15.7	63	0	13.5	59

Fig. 1

Fig. 2

a) The first study year (2002):

The date in Table (1) and Fig. (1) showed that the first occurrence of *S. amygdali* was in mid March, where the mean number of holes due to trapped beetles was one beetle /trap at an average temp. of 19.8^{o}C and 62% R.H. After that the mean number of holes fluctuated slightly in late March, through April month and the late May. This reduction corresponded the same time of fruitfulness of the apricot trees since the wood may be was poorly constituents of food during this period (Girgis, 1987). Then again the beetles recovered their activity and the population increased to record four peaks as follows: the first peak was 4 holes trap in mid June. The second 7 holes/trap in late July, the 3rd peak was 5-8 holes/trap in mid September and the 4th peak 9.4 holes/trap in mid November.

b) The second year of study (2003):

Data given in Table (1) and illustrated in Fig (2) showed that the first appearance of *S.amygdali* was in late March by 1.4 holes/trap at an average temp 17.6 ^{o}C and 58% R.H. After that the mean number of holes fluctuated slightly through April and May months followed by a temporary reduction in the insect population (based on number of holes/trap) had happened in mid May reaching (0.8 holes /trap), then the beetles recovered their activity and the holes increased to record three peaks, as follows: the first peak was 1.8 holes/trap in late May, the second peak was 4.4 holes/trap in late July, the 3st peak recorded 10.4 holes/ trap in mid November.

Therefore the bark beetle appears to rather clumsy flyer with high take-off temperature threshold of 19.8^{o}C mean temp and 17.6^{o}C mean temp at 2002 and 2003, respectively.

Simple correlation between mean temperature and seasonal flight activity was highly significant (r = 0.523** and b = 0.277) and (r = 0.345** and b = 0.161) during 2002 and 2003 year respectively, while simple correlation between relative humidity and seasonal flight activity of the beetles was insignificant (r = 0.089 and b = 5.916) during 2002 year and insignificant (r= 0.278 and b= 0.230) during 2003 year.

These results are similar to those obtained by Abd-Allah (1978) and (1983) and Girgis (1987).

However, contrary results were reported by Hanula and Berisford (1984) in Athens who found that the beetle had three distinct periods of adult flight annually. The beetle occupied the period extended from 19th of April until 31st of October. Vouland *et al*. (1984) in France, reported that the bark beetle *Dendroctonus micans* (Scolytidae) appears to be a rather clumsy flyer with a high take-off temperature threshold of 21ºC.

Annila (1989) reported that bark beetles (Scolytidae) overwinter as larvae or pupae or adults under the bark of their host trees, with rising temperature in spring, their activity increases and when the air temperature has reached about 21ºC. the spring starts.

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النشاط الموسمى لطيران حشرة خنافس القلف على المشمش
باستخدام المصائد الخشبية بمحافظة الفيوم

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تم دراسة استخدام المصائد النباتية (مقاطع خشبية من أشجار المشمش) لمعرفة نشاط الطيران كمادة جاذبة للخنافس وذلك للتنبؤ بالاصابة بواسطة عدد ثقوب الدخول خلال عامى ٢٠٠٢، ٢٠٠٣ فى عام ٢٠٠٢ كان الظهور الأول للخنافس خلال منتصف شهر مارس بمتوسط (١خنفساء/ مصيدة) وتم تسجيل ٤ قمم نشاط لهذه الحشرة الأولى (٤ خنافس/مصيدة) خلال منتصف يونيو، والثانية (٧ خنافس/مصيدة) أواخر يوليو والثالثة (٥.٨ خنافس/مصيدة) خلال منتصف سبتمبر، الرابعة (٩.٤ خنافس /مصيدة) خلال منتصف نوفمبر، فى عام ٢٠٠٣ سجلت الخنافس أول ظهور أواخر مارس (١.٤ خنافس/مصيدة) وسجلت الخنافس ثلاث قمم نشاط الأولى (١.٨ خنافس/مصيدة) أواخر مايو، القمة الثانية (٤.٤ خنافس / مصيدة) أواخر يوليو، القمة الثالثة (١٠.٤ خنافس /مصيدة) خلال منتصف نوفمبر. كما بينت الدراسة أن بداية طيران الخنافس عند درجة حرارة ١٩.٨ ، ١٧.٦ درجة مئوية عام ٢٠٠٢، ٢٠٠٣ على الترتيب.

Fig. (1): Seasonal flight activity of *S. amygdali*, shown as biweekly numbers of holes caused by adult beetles which infested the trap of apricot trees in Ibshawai district, Fayoum Governorate, Egypt during 2002 year, season.

Fig. (2): Seasonal flight activity of *S. amygdali*, shown as biweekly numbers of holes caused by adult beetles which infested the trap of apricot trees in Ibshawai district, Fayoum Governorate, Egypt during 2003 year, season.