

**SEASONAL AND DAILY ACTIVITY OF HAIRY ROS BEETLE,  
*Tropinota squalida* SCOP. (COLEOPTERA:  
SCARABAEIDAE) ON ORANGE TREES**

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**ABSTRACT**

This study was conducted to demonstrate seasonal and daily activity of the adults of *Tropinota squalida* Scop. (Coleoptera: Scarabaeidae) on orange trees. The experiment was carried out at Horticulture farm of Agriculture Faculty, Al Azhar University throughout two successive seasons (2002 and 2003). Results showed that the main activity period of *T. squalida* adults was in the period extended from the end of February to mid of April. The peak of its population was recorded in the second half of March. Adults of this species were found more abundant at noon than other times of the day. Also, the effect of both temperature and relative humidity on beetles population was studied and statistically analysed.

**INTRODUCTION**

Orange fruits (*Citrus sinensis*) is considered as a delicious and popular fruit for Egyptian people, besides it exported to many different parts of the world. Orange trees are attacking by several insect pests, among them *Tropinota squalida* Scop. (Coleoptera: Scarabaeidae). This species is one of the most serious pest for citrus crop, besides to other fruits, vegetables, ornamental and aromatic plants (Novak 1928; Jannone 1947; Guennelon 1959; Ali and Ibrahim 1988; Sherif 1992; Hydar *et al.* 1993; Mohisen 2000; Ortu *et al.*, 2001; Hussein *et al.*, 2002; and Sherief *et al.*, 2003). Therefore, it was important to study the seasonal and daily activity of this pest to obtain some new knowledge to suggest the suitable time for efficient control against *T. squalida*

**MATERIALS AND METHODS**

In order to study the daily activity and population fluctuation of *T. squalida* on orange trees, ten trees were randomly chosen, beetles were directly counted on each tree and recorded weekly observations were recorded three times per day; in morning, at mid-day and at afternoon. The prevailing climatic factors (maximum and minimum temperatures & maximum and minimum relative humidity) also recorded during the activity period of the beetles.

Data were statistically analysed by using simple correlation, partial regression and Duncan multiplicity test in SAS (1988). This study was carried out during two successive seasons (2002 and 2003) at Horticulture farm of Al-Azhar University at Nasr City, Cairo, Egypt.

**RESULTS AND DISCUSSION**

**1. Seasonal activity and the effect of climatic factors on population fluctuation:**

Data of the first season which illustrated in Fig (1) show that insect was generally abundant with a relatively high population from the beginning of March until mid of April. The first appearance of adults of this pest was noticed on 19<sup>th</sup> February. Insect population increased gradually weeks by

week during February and March to reach its peak (10.3 beetles/tree) on 26<sup>th</sup> March. Then the insect population declined slightly till the end of April.

Data of the second year (2003) which shows in Fig.(2) indicate that the first appearance of insect adults on the orange trees was recorded on 19<sup>th</sup> February with average of one beetle/tree. However, insect population increased gradually to reach its peak in the third week of March (10.3 beetles/tree). Then the adult population decreased week by week to disappeared ultimately by the end of April.

The occurrence of the beetles may be due to the flowering period of the trees. The obtained data throughout the two seasons seems to correspond with the findings of Ali and Ibrahim (1988), who reported that this insect greatly abundant with high population through March and April. Moreover, Fadel, (1993), Mohisen (2000) and Tadros *et al.*, (2001) recorded similar results, while Ortu *et al.*, (2000) reported that the period of beetle flight occurred between the time of grape buds began to swell in mid Jun.

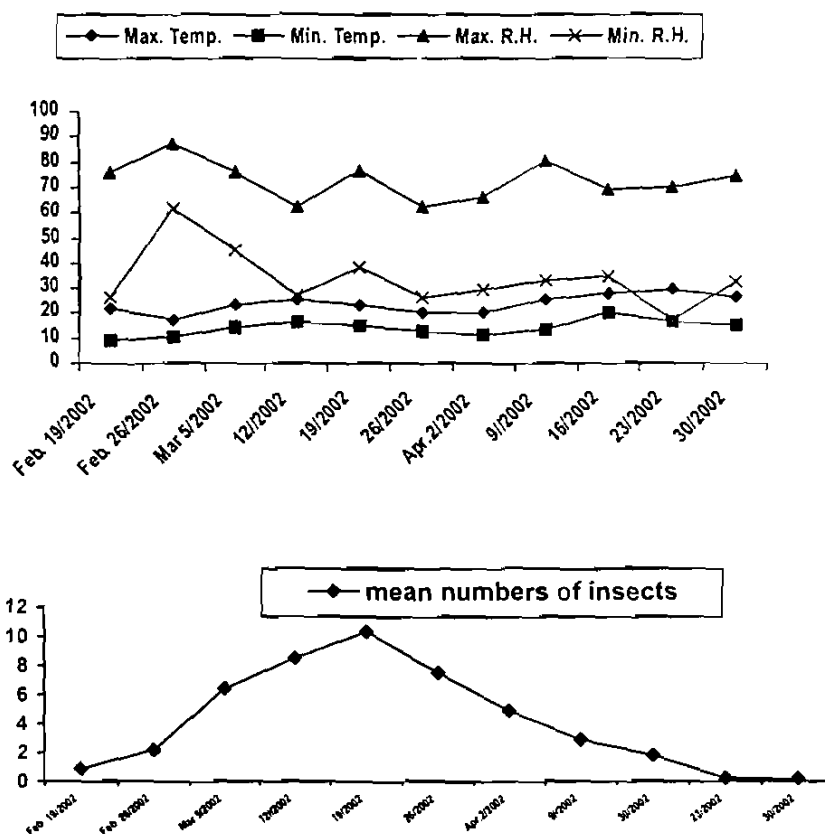


Fig. (1): Weekly fluctuations of *T. squalida* adult in relation to prevailing temperature and reductive humidity throughout 2002 season

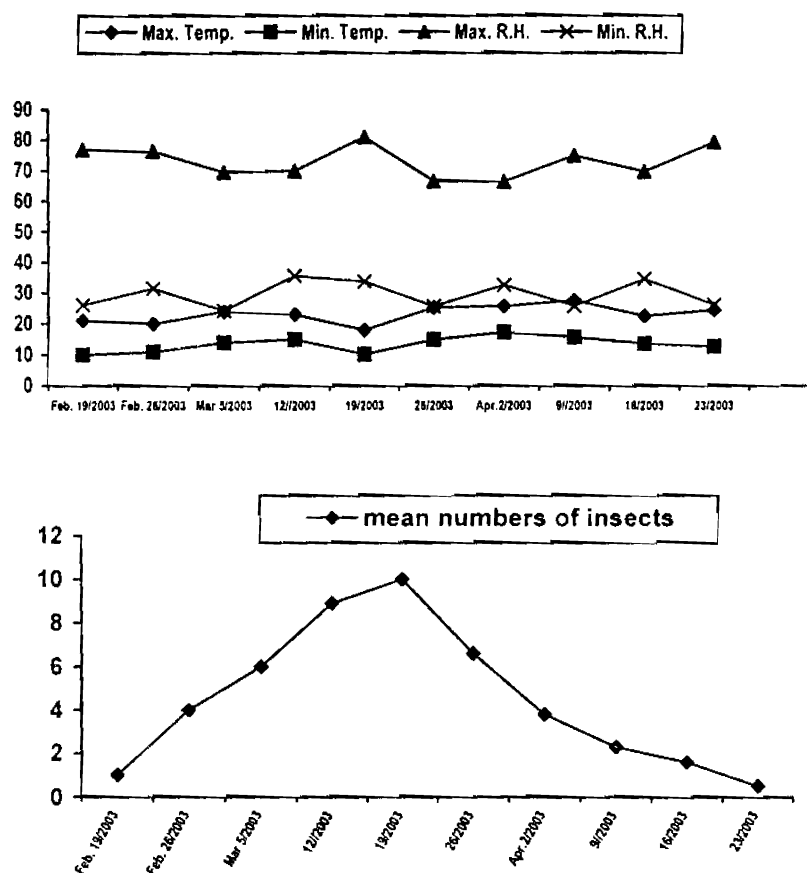


Fig. (2): Weekly fluctuations of *T. squalida* adult in relation to prevailing temperature and relative humidity throughout 2003 season

The results of statistical analysis showed that the relationship between the population fluctuation of the beetles and each of Max. temperature, Min. temperature, Max. relative humidity and Min. relative humidity was insignificant in first season. While in the second season, its was significantly negative in the case of Max. temperature and significantly positive in the case of Max. temperature (Table 1). The four combined climatic factors affected *T. squalida* population by 47% and 69.6% during the first and second seasons, respectively. Tadros *et al.*, (2001) also, stated that the effect of temperature on *T. squalida* population was significantly positive while that of relative humidity was insignificantly negative. It is probably that there are some another factors may be biotic or abiotic influence the population of this insect such as quantity of flowers on the tree.

**Table (1): Simple correlation and regression values and analysis of the effect of four climactic factors on the population fluctuations of *T. squalida* during 2002-2003**

Season	Factors	r	p	b	p	Part. reg.	P	F	E.V
2002	Max. Temp.	-0.263	-	-0.259	-	-0.855	-	1.33	47%
	Mim. Temp.	0.013	-	0.015	-	0.586	-		
	Max. R.H.	-0.484	-	-0.227	-	-0.223	-		
	Mim. R.H.	-0.064	-	0.020	-	-0.026	-		
2003	Max. Temp.	-0.357	-	-0.417	-	-3.785	S	2.87	69.6%
	Mim. Temp.	-0.003	-	-0.004	-	4.342	S		
	Max. R.H.	-0.097	-	-0.061	-	0.324	-		
	Mim. R.H.	0.285	-	0.283	-	0.850	-		

“r” : Simple correlation coefficient value  
 “b” : Simple regression coefficient value  
 “part. reg” : Partial regression “p” : Probity level  
 “S” : Significant “E.V.” : Explained variance

**2. Daily activity of *T. squalida* adults:**

Results in Table (2) clarify that day time markedly affected daily activity of the beetles. Adults of *T. squalida* were significantly more abundant during the period of mid-day than in the morning or at afternoon. The averages of adult numbers were 6.81, 4.36 and 3.67 adults/tree, at mid-day, at afternoon and in the morning, respectively (Table 2). The same behavior was observed in the second season (2003). The greatest numbers of beetles were recorded at noon or mid-day than other two times. The average numbers of beetles were 5.83, 3.86 and 3.75 individuals/tree at mid-day, in the morning and at afternoon, respectively (Table 2). Statistical analysis proved that the differences between the adult number recorded at mid-day and those recorded at the two other times were statistically significant. It is quite obvious that adult of *T. squalida* are more active at noon than other times of the day. These results are in agreement with that obtained by Ali and Ibrahim (1988). Also, Tadros *et al.*, (2001) reported that beetles were active during day on sunny, warm early spring days. Finally, it is clear that the maximum activity of adults was in March especially at periods of mid-day.

**Table (2): Average numbers of *T. squalida* adults/tree during three different times on orange trees in 2002 and 2003 reasons**

Date	2002			2003		
	Morning	mid-day	Afternoon	Morning	mid-day	Afternoon
Feb. 19	2.6	0.1	0	1.5	0	1.4
26	3.1	0.2	3.4	3.5	5.6	3.0
Mar. 5	4.9	9.1	5.1	5.1	7.4	5.4
12	7.6	11.2	6.8	9.2	9.3	8.3
19	6.8	13.4	7.1	9.6	10.8	9.7
26	9.3	15.0	6.6	5.6	9.5	4.8
Apr. 2	7.5	10.7	4.3	2.8	6.5	2.1
9	4.2	7.2	3.3	0.9	4.2	1.8
16	2.0	4.6	2.1	0.4	3.5	1.0
23	0	3.6	1.7	0	1.5	0
30	0	0.5	0	0	0	0
Mean ±S.E.	4.36±0.95	6.81±1.63	3.67±0.77	3.86±1.16	5.83±1.19	3.75±1.02
*	b	a	b	B	a	b

\*Means with the same letter are not significantly different using Duncan multiplery test in SAS (1998)

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النشاط الموسمي واليومي لحشرة جعل الورد الزعبي (رتبة غمدية الأجنحة) على  
أشجار البرتقال  
إبراهيم لييب إبراهيم  
قسم وقاية النبات - كلية الزراعة - جامعة الأزهر - القاهرة - مصر

يعتبر جعل الورد الزعبي من الآفات الحشرية الضارة لأشجار الموالح حيث تتغذى على الأزهار والبراعم الزهرية مما يلحق إضرارا كبيرة بهذه الفاكهة ذات القبول الشعبي في مصر.

ووجد من هذه الدراسة التي أجريت بمزرعة كلية الزراعة - جامعة الأزهر على مدى موسمين كاملين في عامي ٢٠٠٢ و ٢٠٠٣ أن موسم النشاط الرئيسي للحشرات الكاملة لجعل الورد الزعبي يمتد في الفترة ما بين شهر فبراير ونهاية شهر أبريل وتبلغ ذروة أعدادها في النصف الثاني من شهر مارس. كما أوضحت الدراسة أن الحشرات البالغة لهذه الآفة تكون أكثر كثافة في فترة الظهيرة عن باقي أوقات النهار وكذلك تم دراسة تأثير كل من درجات الحرارة العظمى والصغرى وكذلك درجات الرطوبة النسبية العظمى والصغرى على مجموع هذه الحشرة خلال موسمي الدراسة ووجد أنها قليلة التأثير على أعداد الحشرة المتواجدة على أشجار البرتقال.