

## NEW METHOD FOR CONTROLLING THE ORIENTAL HORNET *VESPA ORIENTALIS* L. BY TOXIC DUSTING TRAPPED WASPS AND RETURN RELEASING THEM

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**ABSTRACT:** *The oriental hornet, vespa orientalis is consider one of the factors which effective for the honeybee colonies in Egypt because it caused heavy losses in apicultural development. The present work concerned with studying a new method for controlling the vespa orientalis during the two periods from March to May and from August to October 2013 by dusting the trapped wasps and return release every week to reduced the population in vespa orientalis . Data showed the mean number of queen captured in the traps were 34, 28.6 queen in the period from March to May in apiary Kafer- shbeen , Qalubia governorate and apiary Dokki , Gizza respectively.*

*In Kafer- shbeen , the mean number of releasing toxica wasp captured were 54.9 , 60.2 and 22.7 on months August , September and October respectively. In apiary Dokki , Gizza , the mean number of releasing toxic wasp captured were 65.6 , 65.5 and 34.4 on months August , September and October respectively. In the apiary of Egyptian museum , the mean number of releasing toxic wasp captured were 59.6 , 72.08 and 46.16 on months August , September and October respectively. The dusting by linnet insecticide 90% at the rat 1gram to 100 gram powder sugar were reduced the wasp in the traps for three months after releasing.*

**Key words :** *Vespa orientalis, honeybee, dusting, Linnet 90%, Apis mellifera.*

### INTRODUCTION

The oriental hornet (*vespa orientalis*) is one of the most important predator for honey bee. It causes heavy losses in honeybee colonies; invads weak bee colonies and destroys them by either feeding on adult bees in Summer and Autumn (Muzaffar and Ahmad, 1986 and Sihag, 1992). The oriental hornet (*vespa orientalis*) was not found in January, February and March and it started to appear in April. Activity of the oriental hornet reached its peak during October, November and September (El-Bassioni *et al*, 2010). The abundant number of hornets attacking the honeybee colonies was recorded during September to December yearly (Shoreit, 1998). The wooden hive trap trapped the highly hornets that contains fresh sugar syrup, molasses (Tharwat *et al*, 2002). The hornet control is necessary immediate vicinity of bee-hives or ripening fruits in the field. Control measures included, killing hornet queens in early spring (Ahmed, 1999). Destroying hornet nests by poisonous dusts on the hornets and release

them to poison their nests (Wang *et al*, 1985). example, baits with acetic acid, isobutane, citric-based sodas or heptyl butyrate have been used. These traps are known to be effective for many species of social wasps. (Landolt, 1998, Landolt *et al*, 1999, 2000), but their effects in beehives have not been investigated. Also baits soaked with stomach insecticides have been used. In this case adults become victims but before they are killed they transfer the poisoning insecticides to the nests. Carbohydrate based baits, such as dry icing sugar (Walton and Reid, 1976), artificial honey dews, glucose, sucrose or molasses (Thomas 1960), have been used as alternative nontoxic baits.

### MATERIALS AND METHODS

Three location of experiments were conduct in the apiary of Beekeeping Research Department, Dokki- Baraka Center apiaries, Kafr- Shbeen, Qalubia Governorate and Egyptian museum during

the two periods from March to May and from August to October 2013.

### **Wasp traps :-**

The wooden hive was modified to be a trap for the hornet individuals according to Abou EL- Enain, (1999). It was started by a bottomless line with two chamber modified bee hive wasps traps to be more efficient and easier for application this experiment from March to May. The lower chamber should be provided with the attractive food. This chamber was separated from the upper one by a horizontal wooden board having one or more inverted wire screen cones with different diameter to let the attracted wasps to enter the upper chamber courted by a queen excluder moved to release the wasps after dusting.

### **Places the traps**

Five traps in the apiary beekeeping research department El-Dokki , three traps in Egyptian agriculture museum and five traps in Kafr- Shabeen apiaries Baraka center.

### **The baits:**

The baits were sugar syrup and supplements it contained (honey + powder sugar + powder yeast ) the baits put on every morning to attract the bees and wasps, this baits nontoxic to the bees and wasps .

### **The dusting:**

The attracted wasps were collected and counted weekly by the inner plastic bag and dusting with linnet insecticide 90% (S-Methyl-(methylcarbmoyl) oxythioacetimidate after adding 1 Gram linnet insecticide 90% to 100 Gram powder sugar in the inner plastic bag and released on the air to arrive to the nest and toxic the nest population after contact it .

### **Statistical analysis:**

According to Sendecor (1957) used in this expirment , and M. static computer analysis program.

## **RESULTS AND DISCUSSION**

Table (1) and fig (1) Data show the first apiary in Kafer- shbeen, the mean number of trapped vespa queen from two different location in capture for March were ranged between (0 –3.2) while in April the number of mean queens capture were ranged between (2.6 - 3.8), but in May the number of mean queens were ranged between (1.6 — 3.8). The second apiary in Dokki department apiary, the number of mean queens capture for March were ranged between (0.6 -2.8), while in April the number of mean queens capture were ranged between (2- 2.6), but in May the number of mean queens capture were ranged between (1.6 - 2.4).

Table (2) and fig (2) indicated that the number of mean workers released for the wasps in kafer- shabeen apiary in August were ranged between (23-73.3), while in September the mean number of workers released were ranged between (52.2- 69.6). In October the mean number of workers released were ranged between (3.8- 53.2).

In Table (3) and fig (3) the mean number of workers released for the wasps in Dokki department apiary in August were ranged between (42.6- 88), while in September the mean number of worker released for the wasps were ranged between (56.2-78.2), but in October the mean number of workers released for the wasps were ranged between (10.2- 43.2) .

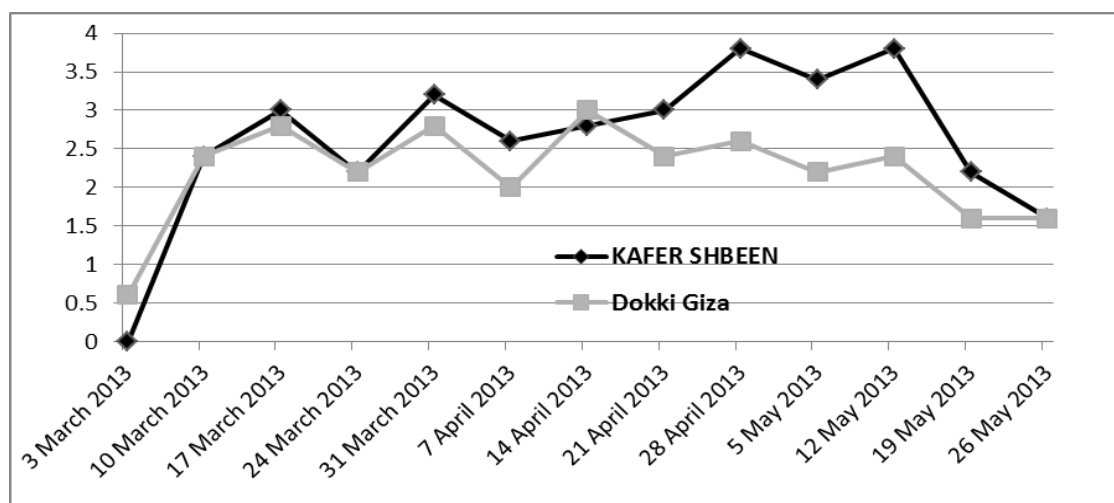
Table (4) and fig (4) revealed that the mean number of worker released for the wasps in Egyptian museum in August were ranged between (48-72.6), while in September the mean number of worker released for the wasps were ranged between (44.3-84.6), but in October the mean number of worker released for the wasps were ranged between (14.3- 73).

It could be concluded that both three sets of experiments were significant.

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**Table (1): Number of vespa queen weekly trapped from two different locations in Egypt from March to May**

Date	Kafer- shbeen . no of trap					Mean	Dokki Giza. No of trap					Mean
	R1	R2	R3	R4	R5		R1	R2	R3	R4	R5	
3/3	0	0	0	0	0	0	1	1	0	1	0	0.6
10/3	2	1	0	3	6	2.4	3	0	3	4	2	2.4
17/3	2	3	2	4	4	3.0	2	4	1	3	4	2.8
24/3	2	0	3	2	4	2.2	3	2	2	1	3	2.2
31/3	1	4	4	2	5	3.2	1	2	3	2	5	2.6
7/4	2	3	5	0	3	2.6	1	1	2	3	3	2.0
14/4	0	5	3	2	4	2.8	3	2	2	4	4	3.0
21/4	1	4	5	3	2	3.0	2	2	4	2	2	2.4
28/4	2	5	3	4	5	3.8	2	3	2	3	3	2.6
5/5	1	4	3	2	7	3.4	2	2	2	2	3	2.2
12/5	2	5	5	3	4	3.8	2	3	2	1	4	2.4
19/5	1	2	4	3	1	2.2	1	2	2	1	3	1.8
26/5	2	3	1	0	2	1.6	0	0	2	1	5	1.6
Total	18	39	38	28	47	34.0	23	24	27	28	41	28.6
Mean	1.38	3	2.92	2.10	3.72	2.71	1.77	1.80	2.08	2.10	3.10	2.10



**Fig. (1): Number of vespa queen weekly trapped from two different locations in Egypt from March to May**

Table (2): The Mean number released of toxic wasp captured in the apiary of Kafer-Shbeen

Date	No. Of traps										Total	mean	Monthly mean
	1		2		3		4		5				
R/D	R	D	R	D	R	D	R	D	R	D	R	R	
9-8	34	12	41	19	53	18	39	0	38	16	205	41	August
16-8	39	16	63	12	0	0	50	12	69	22	229	45.8	
23-8	41	12	55	0	69	30	62	18	68	35	295	59	
30-8	69	25	67	23	56	18	73	17	92	25	366	73.3	
6-9	64	26	56	28	72	25	63	25	93	38	348	69.6	54.9
13-9	63	45	61	29	64	32	33	15	51	12	271	54.2	September
20-9	52	24	63	31	61	34	85	42	62	27	323	64.6	
27-9	60	33	38	17	54	32	50	26	51	21	261	52.2	60.2
4-10	79	12	31	17	63	29	41	18	52	20	260	53.2	October
18-10	12	0	11	4	16	5	0	0	16	1	55	11	
25-10	0	0	12	3	0	0	0	0	7	0	19	3.8	
total	٥١٣		٤٩٨		٥٠٨		٤٩٦		٥٩٩		٢٦١٤	٥٢٢.٨	22.7
Maen	٤٦.٦٤		٤٥.٢٧		46.18		٤٥.٠٩		٥٤.٤٥		٢٣٧.٦	٤٧.٥٣	

L.S.D at 5% between months = 17.059

L.S.D at 5% between traps = insignificant

R: release of toxic wasp captured

D: died of wasp captured after relasing

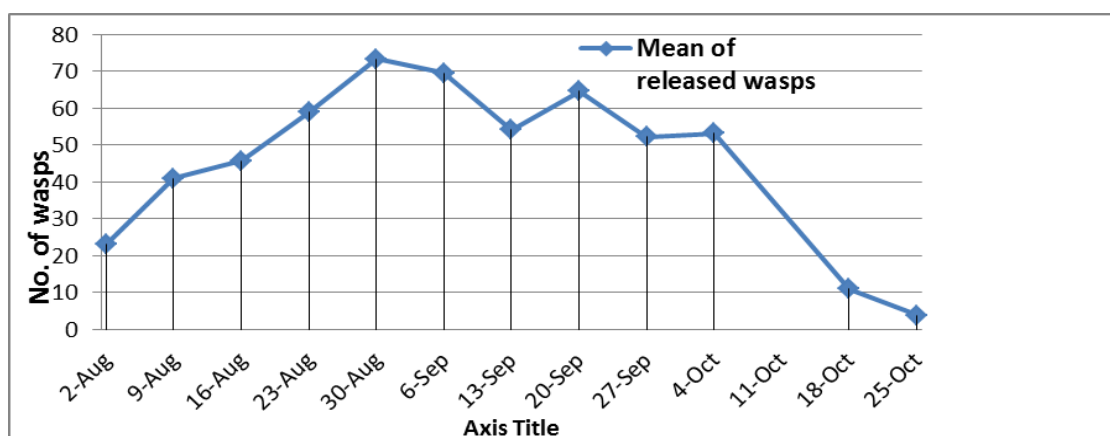


Fig. (2): The mean number released of toxic wasp captured in the apiary of Kafer-Shbeen.

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**Table (3): The mean number released of toxic wasp captured in the apiary of Dokki.**

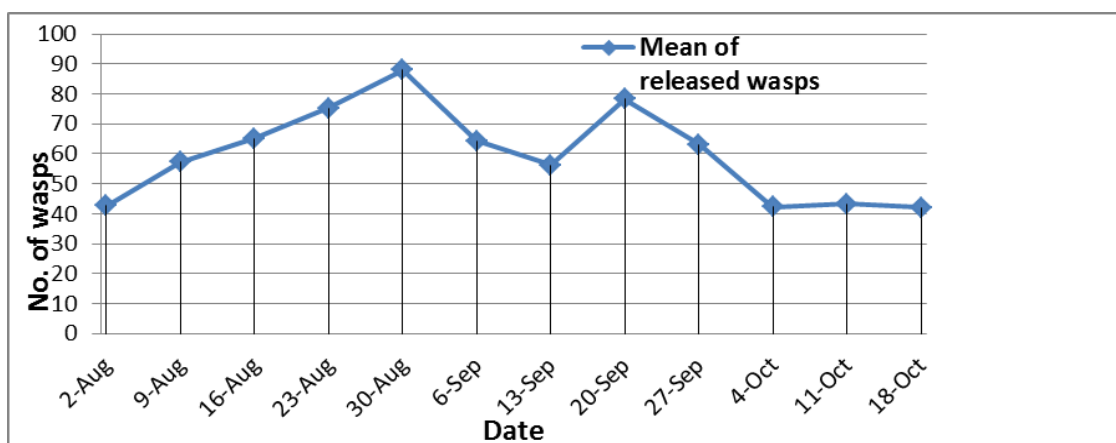
Date	No. of traps										Total	Mean	Monthly Mean
	1		2		3		4		5				
R/D	R	D	R	D	R	D	R	D	R	D	R	R	
2-8	43	12	35	8	54	13	56	18	25	6	213	42.6	August
9-8	48	13	59	14	61	19	54	13	64	18	286	57.2	
16-8	65	24	55	18	74	21	61	25	72	23	327	65.2	
23-8	88	31	73	21	72	20	68	29	77	32	378	75.2	
30-8	125	54	92	44	65	30	72	33	86	71	440	88	65.6
6-9	67	31	28	15	54	13	90	25	84	38	323	64.4	September
13-9	60	34	80	31	59	15	53	17	30	13	282	56.2	
20-9	86	32	65	27	87	28	69	22	87	24	394	78.2	
27-9	56	15	80	34	39	13	72	30	70	31	317	63.2	65.5
4-10	53	27	49	11	20	5	60	32	31	11	213	42.2	October
11-10	61	24	80	12	42	93	0	0	33	12	216	43.2	
18-10	38	7	32	20	62	2	21	4	60	15	213	42	
25-10	4	1	41	4	0	0	7	2	0	0	51	10.2	34.4
Total	794		769		689		683		719		3604	727.8	
Mean	61.08		59.10		53		52.04		50.31		73.08	50.98	

L.S.D at 5% between months =12.85

L.S.D at 5% between traps = insignificant

R: release of toxic wasp captured

D: died of wasp captured after relasing



**Fig. (3): The mean number released of toxic wasp captured in the apiary of Dokki.**

Table (4): The mean number released of toxic wasp captured in the apiary of Egyptian museum.

Date	No. of traps						Total	Mean	Monthly Mean
	1		2		3				
R/D	R	D	R	D	R	D	R	R	
2-8	38	21	65	18	54	14	157	53.3	August
9-8	95	49	82	33	41	18	218	72.67	
16-8	80	23	64	27	40	20	184	61.33	
23-8	53	31	47	30	44	15	144	48	
30-8	52	21	64	12	75	21	191	63.67	59.6
6-9	89	35	70	29	72	15	231	77	September
13-9	75	31	23	11	35	13	133	44.33	
20-9	93	42	72	31	89	25	254	84.67	
27-9	99	31	68	35	80	19	247	82.3	72.08
4-10	82	23	62	30	75	15	219	733	October
11-10	86	25	80	35	53	17	219	73	
18-10	43	8	30	9	0	0	73	24.33	
25-10	28	3	0	0	15	0	43	14.33	46.16
Total	913		727		658		2298	770.99	
Mean	70.23		55.92		54.83		766	59.31	

L.S.D at 5% between months = 12.4  
 L.S.D at 5% between traps = insignificant  
 R: release of toxic wasp captured  
 D: died of wasp captured after relasing

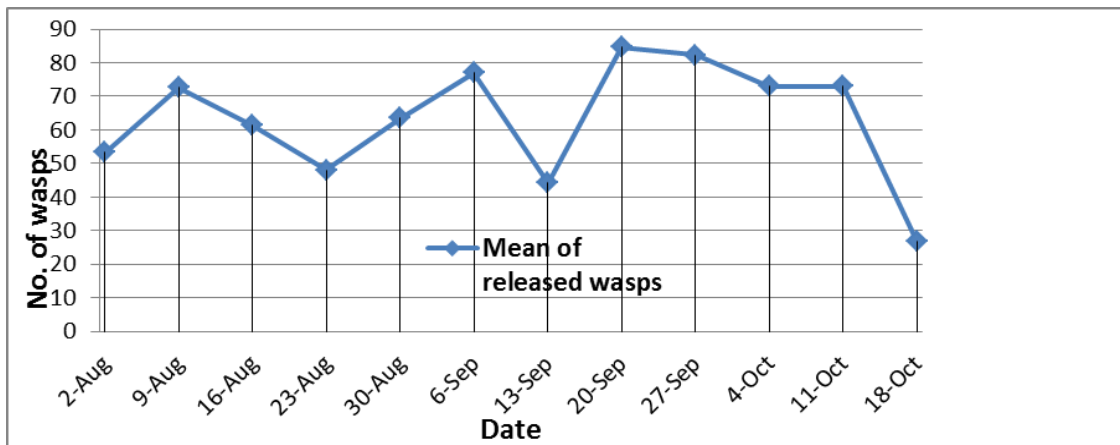


Fig. (4): The mean number released of toxic wasp captured in the apiary of Egyptian museum.

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## طريقة جديدة لمكافحة دبور البلح الأحمر بواسطة تسمم الدبابير المصاده في المصائد وإعادة إطلاقها

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### الملخص العربي

يعتبر دبور البلح من العوامل التي تؤثر على تربية نحل العسل في مصر لأنه يسبب خسارة كبير و يهدف البحث إلى دراسة طريقه جديدة لمكافحة دبور البلح و ذلك بتعفير شغالات الدبور الشرقي بعد جمعه بالمصائد وإطلاقه باستخدام مبيد اللانث ٩٠% بوجدر بمعدل ١٠٠جم/جم سكر بودرة و تعفير الشغالات و إطلاقها وقد أدى ذلك إلى الإقلال من انتشار أعداده.

### وأوضحت النتائج :

أن متوسط اعداد الملكات التي جمعت بالمصائد كانت ٣٤ , ٢٨.٦ ملكة في الفترة من مارس حتي مايو ٢٠١٣ في منطقتي كفر شبين والدقي علي الترتيب.

وكان متوسط أعداد الدبابير التي تم إطلاقها ٥٤.٩ , ٦٠.٢ , ٢٢.٧ في شهور أغسطس وسبتمبر وأكتوبر علي الترتيب . بمنحل كفر شبين .

وكان متوسط اعداد الدبابير التي تم إطلاقها ٦٥.٦ , ٦٥.٥ , ٣٤.٤ في شهور أغسطس وسبتمبر و أكتوبر علي الترتيب بمنحل الدقي .

وكان متوسط اعداد الدبابير التي تم إطلاقها ٥٩.٦ , ٧٢.٠٨ , ٤٦.١٦ في شهور أغسطس وسبتمبر واكتوبر علي الترتيب بمنحل المتحف الزراعي المصري.

### وتوصي النتائج .

بتعفير شغالات الدبور بعد جمعه بالمصائد بمبيد اللانث ٩٠% بمعدل ١٠٠جم /جم سكر بودرة وأعداده إطلاقه في مناطق المناحل الموبوءة بعشوش الدبابير.