

STUDY THE EFFECT OF SOME COMPOUNDS AGAINST CERTAIN PESTS INFESTING SOME MEDICINAL AND ORNAMENTAL PLANTS AND PRODUCTIVITY

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ABSTRACT

This study was carried out to evaluate some compounds (Crater; Baicao and Ashook) against aphid insect (*Aphis craccivora*) and its predator *Coccinella undecimpunctata* on some plants, (green mint; pepper mint; dill and thyme plants) with different concentrations under laboratory conditions and EL-Fayoum Governorate during the seasons 2007 and 2008. The results were obtained, directly before spraying as a pre-count and then after 1, 3, 5 and 7 days as a post count at field and after 24 hr at laboratory. Crater was the most effective compound against aphid individuals, followed by Baicao and Ashook on some plants, (green mint; pepper mint; dill and thyme plants). Baicao was the most effective compound against the predator *Coccinella undecimpunctata* on some plants, (green mint; pepper mint; dill and thyme plants) . The mean general reduction of aphid individuals could be arranged as follows Crater (89.47;90.2;87.5 & 88.3%) at 0.6 ml/l (80.61;82.1;79.9 &80.5%) at 0.3 ml/l and(73.66;70.9;75.1 72.6%) at 0.1ml/l while Ashook (81.53;80.0;77.9&79.9%) at 3.7 ml/l(59.88;60.2;58.6 &57.8%) at 1.8 ml/l (58.40 ;55.9 ;56.8& 58.1%) at 0.9 ml/l) on different plants, (green mint; pepper mint; dill and thyme plants) respectively, during the first seasons. The results obtained during season 2008 were the same season 2007.

INTRODUCTION

Medicinal and ornamental plants are considered the most important crops in our agricultural production for human health as well as for export purposes outside the country.

Various pests associated with medicinal and ornamental plants especially piercing sucking pests which include such as white fly; aphids & thrips. These pests cause a great damage and yield losses (Ali (1988); Ahmed (1990); El-Sayed, (1993) and Afsah (2005)).

The common predators are Coccinellidae, Syrphidae, and Chrysopidae.(Kavallieratos *et al* (2004)). The exports quantity anticipator for plants during 2010 season, 16107 Ton sums 26.9 million (El-Asser, 1999).

Thus, this study is conducted to: evaluate of the efficacy of some natural and bio-control agents against some pests and predators associated with some medicinal and ornamental plants.

MATERIALS AND METHODS

The effects of different compounds (Crater, Baicao and Ashook) against the adults of aphid insects were studied. Diluted suspensions of these compounds were prepared using water to compare between different concentrations under laboratory conditions. The method of indirect exposure method was employed throughout the present experiments. Uninfected

leaves of on some plants,(green mint; pepper mint; dill and thyme plants) were dipped in the different concentrations 0.6, 0.3 ,0.1 and 0.05 ml/L of Crater; 0.125, 0.25, 0.5 and 1.0 ml/L with Baico &0.4,0.9,1.4 and 3.7 ml/L with Ahook.. Five leaves dipped in clean water were also used as an untreated check (control). The leaves were left for 10 minutes to dry. Twenty adults were transferred from the infested leaves to the treated leaves by means of hairbrush. The leaves were transferred to clean Petri-dishes, which were then covered with muslin cloth held in position by rubber bands to prevent the insects from escaping. They were maintained at room temperature of about $27\pm 1^{\circ}\text{C}$ and 70-75% RH). After 24 hrs the dead and moribund aphids were counted. This study was conducted on some plants,(green mint; pepper mint; dill and thyme plants), at EL-Fayoum Governorate during Apr. of seasons 2007 and 2008. An area of 0.5; 0.25; 0.25 and 0.3 feddan was divided into three plots, for cultivation green mint; pepper mint; dill and thyme plants. The plots were arranged in randomized block with three replicates for each treatment, and another three replicates as control. The plots were arranged in randomized block. Each plot was sprayed with different tested agents using a knapsack sprayer. Control plots were sprayed with water only.

Two natural compounds, which gave the good reduction under laboratory tests and were more safe to the predators (Crater with three concentrations 0.6, 0.3 and 0.1 ml/L and Ashook also, with concentrations of 3.7, 1.8 and 0.9 ml/L) were sprayed under field conditions, to evaluate the efficacy of these compounds on the number of individuals; the samples were taken before spraying as a pre-count and then after 1, 3, 5 and 7 days as a post count. Each sample consisted of 20 plants taken randomly form each treatment. The sampled leaves were collected in paper bags and transferred to the laboratory for examination. Individuals were counted under a stereomicroscope, and both surfaces of each leaf were inspected. The same technique was done for on some plants,(green mint; pepper mint; dill and thyme plants) at El-Fayoum Governorate.

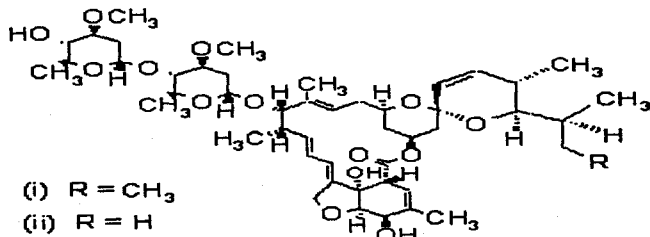
***. Tested compounds:**

The compounds used in the present experiments were:

1-Crater (Afrasa), Vamectin 1.8 EC at rate 30 ml./100 liter water.

Chemical name: Abamectin: a mixture containing a minimum 80% Avermectin B, a (5-0-demethyl- Avermectin A, a) and maximum of 20% Avermectin B, b (5-0-demethyl – 25 – de – (1-methylpropyl – 25 – (1-methyl) Avermectin A, a)

Chemical structure:-



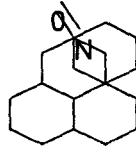
Trade names: Avid – Acri – Mek – Vertemic – Avomec.

2- Baiocao No.1 (0.36% matriline aqueous solution) at rate 100ml/ 100 liter water.

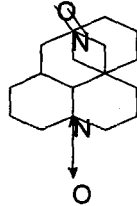
Chemical name:- Matriline. SOPHOCARPIDINE (CALCULATED AS OXYMATRINE).

Chemical formula:- C₁₅H₂₄N₂O-C₁₅H₂₄N₂O₂.

Chemical structure:-



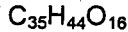
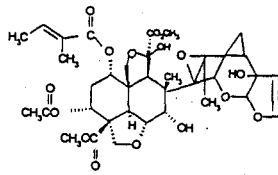
MATRINE



OXYMATRINE

3- Azadirachtin 1500 ppm (Achook 0.15%) [neem kernel based EC containing Azadirachtin 0.15%ww (1500ppm), *Azadirachta indica* A., Fam: Meliaceae]. Produced by Bahar Agrochem and Foods Pvt. Ltd., India.

Chemical structure:-



Statistical analysis:

In these laboratory tests, mortality percentages were calculated and corrected for natural mortalities by Abbott's formula, 1925:

$$\text{Mortality \%} = \frac{\text{Mortality of treatment} - \text{Mortality of control}}{\text{Mortality of control}} \times 100$$

The corrected percent mortalities were statistically analyzed according to Finney (1952). The tested compounds were compared for their efficiency according to their LC₅₀ and LC₉₀ of the toxicity lines.

Under field conditions, the reduction percentages of infestation by compounds and by predators were calculated according to the equation of Henderson and Tilton (1955).

$$\text{Reduction (\% mortality)} = \frac{1 - \left[\frac{C_b}{C_a} \left[\frac{T_a}{T_b} X - \right] \right]}{1} \times 100$$

The Data was subjected to analysis of variance (ANOVA) and the means were compared by L.S.D. test at 0.05 level, using SAS program.

RESULTS

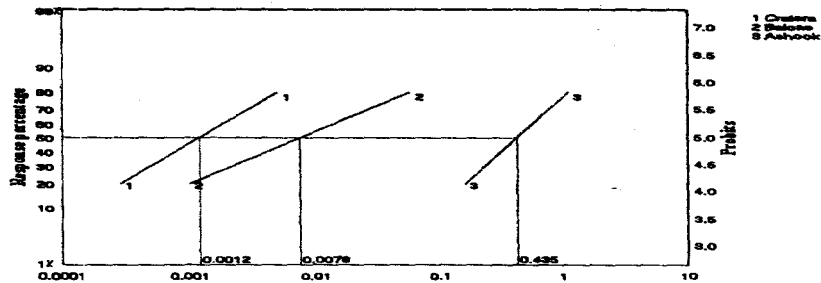
Data in Table (1) Fig.(1) indicated that, Crater was the most effective biotic pesticide against aphid insects with mean reduction percentages 99, 96.35, 94.6 and 91.2% at concentrations 0.6, 0.3, 0. 1 and 0. 05 mL, on, (green mint; pepper mint; dill and thyme plants) respectively.

Baicao bio-pesticide gave mean mortality percentages, 99, 95.9, 84.6 and 81.7% at concentrations of 1, 0/5, 0.25, and 0.125, mL on,(green mint; pepper mint; dill and thyme plants) respectively. While mean reduction percentages of Ashook reached 99, 89.1, 61.6 and 53.6 % at 3.7, 1.7, 0.9 and 0.4 mL on,(green mint; pepper mint; dill and thyme plants) respectively.

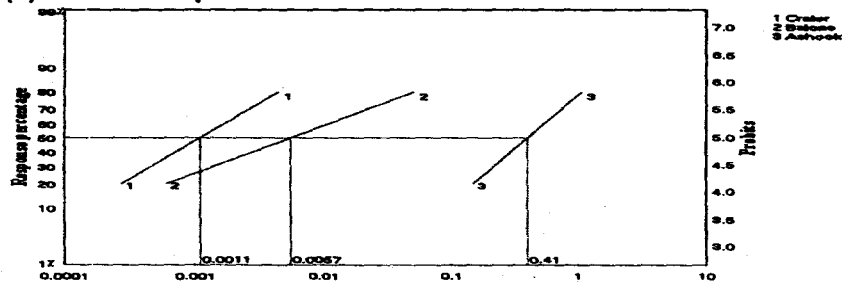
Taking the slope values in our consideration; data in Table (3) showed that, Ashook had the highest value 2.003;1.994;1.994 and 1.966 on, (dill; green mint; thyme and pepper mint plants) respectively. Followed by Crater 1.381;1.376;1.336 and 1.324 on,(pepper mint; dill; green mint and thyme plants), Baicao 1.868;1.047;0.949 and 0.168 on,(pepper mint; dill; green mint and thyme plants) In the same Table 3 ,Fig 1 the recorded LC_{50} and LC_{90} values for Crater were 0.0012;0.011;0.0014 & 0.0013 mL and 0.011;0.0095;0.012&0.013, on,(green mint; pepper mint; dill and thyme plants) respectively, followed by Baicao and Ashook. Data also showed that, Crater had the highest Toxicity index at LC_{50} and LC_{90} which were 100%, respectively.

Table (1): Efficacy of certain compounds against *Aphis craccivora* individuals, 24 hours following the treatment under laboratory conditions.

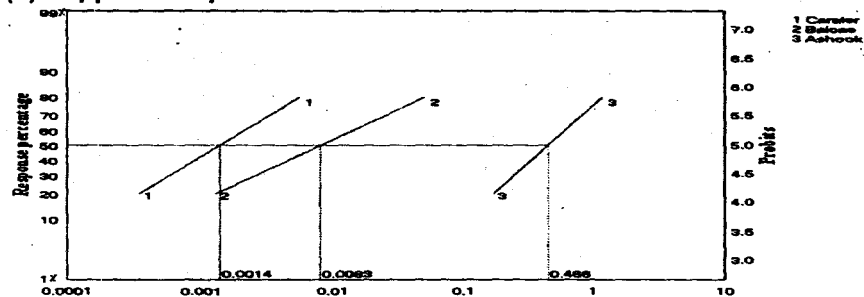
Treatments	Conc.	Corrected mortality %				Mean of mortality %
		Green mint	Pepper mint	Dill	Thyme	
Crater	0.05	92.0	93.0	90.0	89.6	91.2
	0. 1	94.3	95.3	93.3	93.6	94.6
	0.3	96.6	96.6	96.66	95.6	96.35
	0.6	99.0	99.0	99	99.0	99.0
Baicao	0.125	81.6	84.3	80.33	80.66	81.7
	0.25	85.3	86.3	83.33	83.66	84.6
	0.5	95.6	96.6	95.0	96.6	95.9
	1.0	99.0	99.0	99.0	99.0	99.0
Ashook	0.4	54.0	56.0	52.0	52.6	53.6
	0.9	62.3	63.6	60.0	60.6	61.6
	1.7	89.6	90.6	88.0	88.3	89.1
	3.7	99.0	99.0	99.0	99.0	99.0
Control	-	-	-	-	-	-



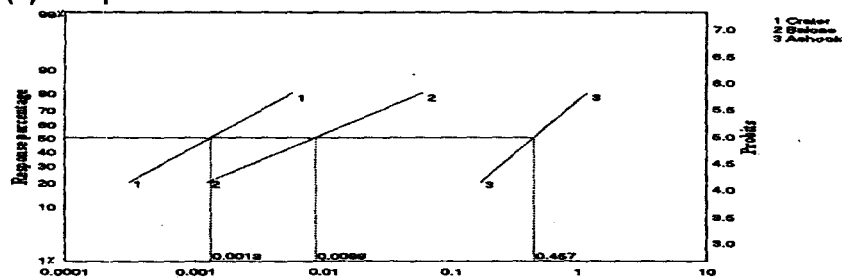
(1) Green mint plant.



(2) Pepper mint plant.



(3) Dill plant.



(4) Thyme plant.

Fig: (1): Efficacy of certain compounds against *Aphis craccivora* individuals, on some medical and ornamental plants, 24 hours following the treatment under laboratory conditions

Table (2): Efficacy of certain compounds against *Coccinella undecimpunctata*, 24hours following the treatment under laboratory conditions.

Treatments	Conc.	Mean corrected mortality %				Mean of mortality %
		Green mint	Pepper mint	Dill	Thyme	
Crater	0.05	1.0	1.0	1.0	1.0	1.0
	0.1	5.6	5.3	11.0	11.3	8.3
	0.3	9.6	6.6	11.0	11.1	9.5
	0.6	11.0	11.0	11.0	11.1	11.0
Baicao	0.125	1.0	1.0	1.0	1.0	1.0
	0.25	4.3	5.3	11.0	6.6	6.8
	0.5	6.6	5.6	11.0	9.6	8.3
	1.0	11.0	22.6	22.2	11.9	16.9
Ashook	0.4	0.0	0.0	0.0	0.0	0.0
	0.5	0.0	0.0	0.0	0.0	0.0
	1.7	0.0	0.0	0.0	0.0	0.0
	3.7	0.0	0.0	0.0	0.0	0.0
Control	-	-	-	-	-	-

Table (3): Efficacy of certain compounds against *Aphis craccivora* individuals, on some plants 24 hours following the treatment under laboratory conditions.

Plants	Treatment	Lc50	Lc90	Slope +S. D	Toxicity index Lc50
Green mint	Crater	0.0012	0.011	1..336±0.2	100
	Baicao	0.0078	0.175	0.949±0.1	15.385
	Ashook	0.435	1.912	1..994±0.13	0.276
Pepper mint	Crater	0.0011	0.0095	1..381±0.3	100
	Baicao	0.0057	0.171	1.868±0.5	19.298
	Ashook	0.41	1.84	1.966±0.3	0.268
Dill	Crater	0.0014	0.012	1..376±0.3	100
	Baicao	0.0083	0.139	1.047±0.11	16.867
	Ashook	0.466	2.034	2.003±0.8	0.300
Thyme	Crater	0.0013	0.013	0.013±0.0	100
	Baicao	0.0088	0.168	0.168±0.01	14.778
	Ashook	0.457	2.009	1..994±0.6	0.284

According to the toxicity index of Ashook 0.268 to 0.3% at Lc₅₀ Generally, Table (3) Crater was the most effective compound against aphid individuals.

These results were in agreement with Putter *et al.* (1981), Gripwall (1999) Miranpuri and Khachatourians (1993).

Data in Table (4) Fig. (2) Showed, Baicao gave the highest reduction percentage against the predator insect *Coccinella undecimpunctata* on, (green mint; pepper mint; dill and thyme plants) respectively.

Lc₅₀ for Baicao was 14.354 ;14.268 ; 4.052 and 3.188 ml, while Lc₉₀ was 320.74;242.93;43.79 and 19.377 ml, on thyme; green mint; dill and pepper mint respectively, While the toxicity index at Lc₅₀ for Crater was 100%, followed by Baicao .

Data also indicated that, Ashook had no toxicity effect against the 11 spotted ladybird beetle at all. Generally, Ashook not affected the predator completely.

These results were in agreement with Parlyushin (1996); Omer and El-Khateeb (2002).

Data presented in Table (5) indicated that, the mean number of aphid individuals decreased at the concentrations increased for Crater and Ashook on, (green mint; pepper mint; dill and thyme plants) respectively.

The reduction rate of aphid individuals increased on pepper mint (90.4 and 92.2% at rate 0.6, for Crater during seasons 2007 and 2008. The reduction rate of aphid individuals decreased on dill plant 87.6 and 87.5 % on green mint during seasons 2007 and 2008 for Crater

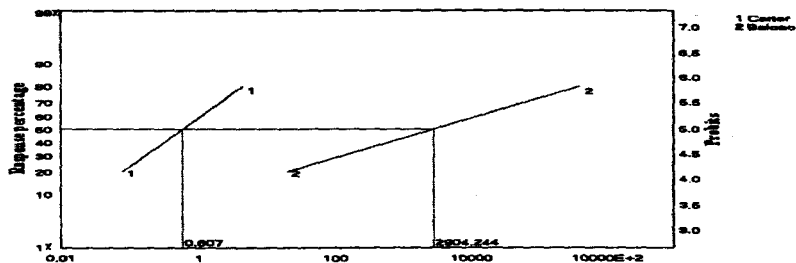
Data also indicated that, the reduction percentages of aphid individuals decreased at the concentrations 0.9 ml/L for Ashook on pepper mint during two seasons. However, they were increased at rate 3.7 ml/L for Ashook to reach (81.5 and 83.1 %) on green mint and pepper mint, during two seasons respectively.

These results indicated that, crater was more toxic against aphid than Ashook.

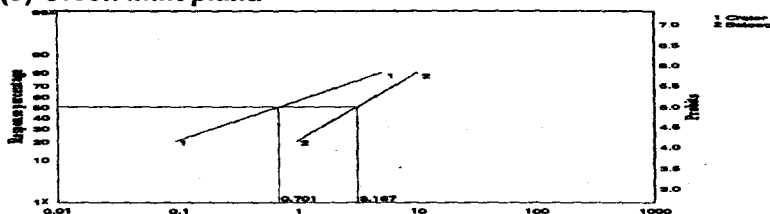
The results in Tables 7 and 8 indicated that, the effect of two treatments on yield, showed the same line and trend for (green mint; pepper mint; dill and thyme plants) during 2007 and 2008 seasons.

Table (4): Efficacy of certain compounds against *Coccinella undecimpunctata*, on some plants 24 hours following the treatment under laboratory conditions

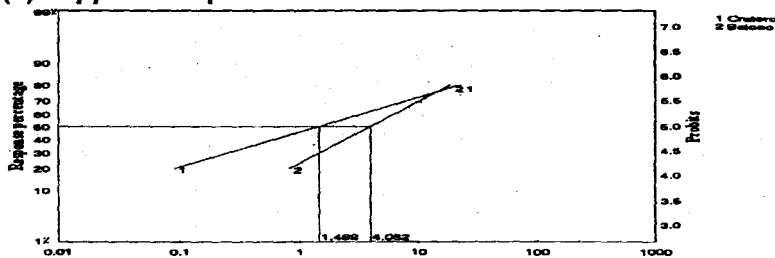
Plants	Treatment	Lc50	Lc90	Slope +S. D	Toxicity Index Lc50
Green mint	Crater	0.0607	13.17	0.959±0.7	100
	Baicao	14.268	242.93	1.041±0.33	4.254
	Ashook	0.0	0.0	0.0	0.0
Pepper mint	Crater	0.701	14.916	1.675±0.25	100
	Baicao	3.188	19.377	1.635±0.43	21.996
	Ashook	0.0	0.0	0.0	0.0
Dill	Crater	1.489	43.74	0.697±0.67	100
	Baicao	4.052	43.79	1.24±0.85	36.747
	Ashook	0.0	0.0	0.0	0.0
Thyme	Crater	1.494	106.166	0.692±0.28	100
	Baicao	14.354	320.74	0.950±0.64	10.408
	Ashook	0.0	0.0	0.0	0.0



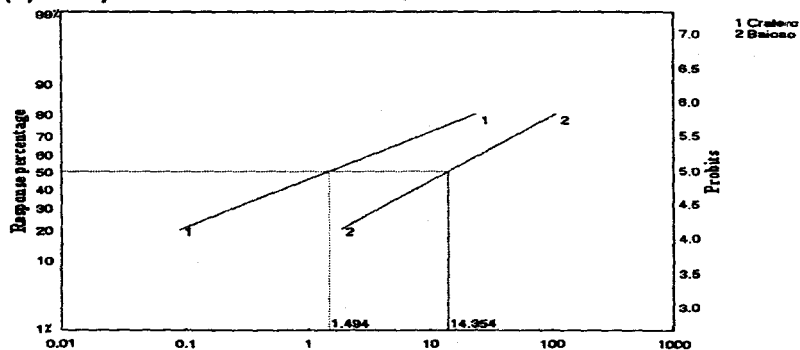
(5) Green mint plant.



(6) Pepper mint plant.



(7) Dill plant.



(8) Thyme plant.

Fig (2): Efficacy of certain compounds against *Coccinella undecimpunctata*, on some medical and ornamental plants 24 hours following the treatment under laboratory conditions.

Table (5): Efficiency of two treatments against *Aphis craccivora* on some medicinal and ornamental plants during 2007 at EL-Fayoum Governorate.

Plants		Green mint		Pepper mint		Dill		Thyme	
Compound	Con.	Mean number/plant, after treatments (7days)							
		Pre-count	Reduction (%)	Pre-count	Reduction (%)	Pre-count	Reduction (%)	Pre-count	Reduction (%)
Crater	0.6	32.6	4.23 (89.5)a	31.2	3.5 (90.4)a	33.0	4.2 (87.6)a	30.5	3.6 (88.4)a
	0.3	20.3	5.1 (80.6)b	19.1	3.9 (82.6)b	21.0	4.4 (79.6)b	22.5	4.5 (80.4)b
	0.1	21.3	7.6 (73.7)c	20.2	5.3 (77.6)c	23.2	5.9 (75.3)b	21.9	6.1 (72.7)c
Ashook	3.7	42.5	9.6 (81.5)a	44.0	9.9 (80.0)a	46.2	10.5 (77.9)b	43.5	9.0 (79.7)b
	1.8	37.0	10.1 (59.9)c	35.0	16.3 (60.4)b	39.3	17.0 (58.0)c	40.0	17.5 (57.1)c
	0.9	40.0	20.3 (58.4)c	48	25 (55.7)c	45.6	19.9 (57.6)c	41.5	17.6 (58.4)c
Control	-	29.9	36.8	31.5	37.0	32.2	33.0	34.5	35.0

The means with the same letters at the same column for the same compound are significantly different at 0.05% level.

Table (6): Efficiency of two treatments against *Aphis craccivora* on some medicinal and ornamental plants during 2008 at EL-Fayoum Governorate.

Plants		Green mint		Pepper mint		Dill		Thyme	
Compound	Con.	Mean number/plant, after treatments (7days)							
		Pre-count	Reduction (%)	Pre-count	Reduction (%)	Pre-count	Reduction (%)	Pre-count	Reduction (%)
Crater	0.6	30.3	4.2 (87.5)a	25.3	2.2 (92.2)a	32.0	4.2 (88.9)a	30.5	3.5 (89.6)a
	0.3	22.5	4.7 (81.2)b	23.0	5.1 (80.3)b	35.0	9.5 (77.2)b	28.5	5.5 (82.6)b
	0.1	22.0	7.0 (71.3)c	25.0	7.5 (73.3)c	30.0	10.0 (72.0)b	21.0	6.0 (74.2)c
Ashook	3.7	35.7	7.7 (80.1)a	27.0	5.0 (83.1)a	30.0	8.7 (75.6)b	29.0	7.0 (78.2)b
	1.8	31.5	14.9 (57.4)c	27.5	11.5 (62.7)b	25.0	12.9 (56.6)c	25.0	12.3 (55.7)c
	0.9	30.3	15.0 (55.4)c	29.5	15.5 (53.2)c	27.0	14.5 (54.8)c	22.0	10.6 (56.6)c
Control	-	30.0	33.0	31.5	35.3	30.3	36.0	29.5	32.5

The means with the same letters at the same column for the same compound are significantly different at 0.05% level.

Table (7): Area, yield and production of some medical and ornamental plants at EL-Fayoum Governorate during season 2007.

Plants	Area (Fed.)	Production (Ton)	Mean Production (Ton/Fed.)	
			Treatment	control
Green mint	0.5	11.26	22.53	2.333
Pepper mint	0.25	5.3	21.2	2.505
Thyme	0.25	0.6	2.4	2.0
Dill	0.3	1.53	5.1	4.68
Total	1.3	18.69	51.23	11.518

Table (8): Area, yield and production of some medical and ornamental plants at El-Fayoum Governorate during season2008.

Plants	Area (Fed.)	Production (Ton)	Mean production (Ton/Fed.)	
			Treatment	control
Green mint	0.5	11.81	23.61	22.943
Pepper mint	0.25	5.94	23.77	22.964
Thyme	0.25	0.58	2.3	0.5
Dill	0.3	1.56	5.2	4.09
Total	1.3	19.89	54.88	50.5

Results indicated that, the Crater compound, gave higher yield followed by Ashook, On other hand, %yield increase for green mint was (22.53;21.2;2.4&5.1Ton/Fed) ;(23.61;23.77; 2.3 &5.21Ton/Fed), during the two seasons (2007&2008), for (green mint; pepper mint; dill and thyme plants)respectively compared with control.

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دراسة تأثير بعض المركبات ضد بعض الآفات التي تصيب بعض النباتات الطبية و العطرية وأنتاجيتها
حورية علي عبد الوهاب*، سعاد عبد الفتاح إبراهيم** و روضة محمد الدابي*
* معهد بحوث وقاية النبات - مركز البحوث الزراعية - الفي جيزة
** كلية العلوم الزراعية البيئية بالعريش - جامعة قناة السويس
مقدمه:

تعتبر النباتات الطبية ونباتات العطرية من أهم الحاصلات الزراعية وذلك لاستخدامها في الاغراض الطبية المختلفة بالإضافة إلي أهميتها في الأغراض التصديرية خارج البلاد. تصاحب النباتات الطبية ونباتات الزينة أنواع مختلفة من الآفات والحشرية وخاصة الآفات الثاقبة الماصة التي تؤثر علي إنتاجها. ومن أهم هذه الآفات الذبابة البيضاء، المن، التربس. ولما كانت محافظة الفيوم من أكثر المحافظات انتاجية لهذه النباتات فانها تواجه بعض المشاكل الحشرية التي تصيب هذه النباتات وخاصة حشرة المن والتي تؤدي الي خفض الانتاجية. وتعتبر المن من أهم الآفات الحشرية التي تسبب فقد في المحصول و من أهم مفترساته عائلة Chrysopidae, Syrphidae, and Coccinellidae. لذلك فقد تم إجراء عدة تجارب في المعمل والحقل لعل تأثير بعض المركبات الحيوية والطبيعية و المفترس *Coccinella undecimpunctata* علي خفض تعداد هذه الآفة المن. ومن المتوقع كمية الصادرات من نباتات الطبيه و العطرية نحو 111.7 طن عام 2010 بقيمة تقدر بنحو 26,9 مليون جنيه (El-Asser (1999). مشكلة البحث: في إنتاج بعض النباتات الطبية و العطرية في محافظة الفيوم تواجه بعض المشاكل مثل حشرة المن التي تصيب النباتات الطبية و العطرية وتعمل علي خفض الانتاجية.

الهدف من البحث: ويهدف هذا البحث الي دراسة فاعلية بعض المركبات علي حشرات المن ومفترسها علي بعض النباتات الطبية و العطرية مثل (النعناع الاخضر و النعناع الفلفلي و الشبث و الزعتر) تحت الظروف المعملية و الحقلية خلال الموسمين 2007 و 2008 و أخذ النتائج قبل الرش مباشرة ثم بعد الرش 1، 3، 5، 7، يوم ودراسة الانتاج وتأثيرها علي مدى الكفاءة الانتاجية في محافظة الفيوم.
الملخص:

1- تأثير بعض المركبات الحيوية ضد المن بعد 24 ساعة من المعاملة تحت الظروف المعملية:
أظهرت الدراسة أن المبيد الحيوي كراتر كان أكثر المبيدات تأثيرا علي أفراد المن مسجلا متوسط نسبة خفض 99.99، 96.6، 94.6 و 91.2% عند تركيزات 0.6، 0.3، 0.1 و 0.05 مل أ لتر علي التوالي يليه بيوكا بنسبة خفض 99.99، 95.9، 84.6 و 81.7% عند تركيزات 1.0، 0.5، 0.25 و 0.125 مل أ لتر علي التوالي وأخيرا مبيد أشوك بمتوسط نسبة خفض 99، 89.1، 71.6 و 53.7% عند تركيزات 3.7، 1.9، 0.9 و 0.4 مل أ لتر علي التوالي النعناع الاخضر و النعناع الفلفلي و الشبث و الزعتر علي التوالي.

وبصفة عامة فإن المبيد الحيوي كراتر كان أكثر المبيدات تأثيرا علي أفراد المن يليه بيوكا ثم أشوك.
2- تأثير بعض المركبات ضد *Coccinella undecimpunctata* بعد 24 ساعة من المعاملة.
كزن مركب بيوكا أعطى أعلى متوسط نسبة الخفض علي المفترس 1.0، 6.8، 8.3 و 16.9% للاربع تركيزات 0.125، 0.25، 0.5 و 1.0 مل أ لتر علي التوالي يليه مبيد الكراتر بنسبة خفض 1.0، 8.3، 9.6 و 11.0% للاربع تركيزات 0.05، 0.1، 0.3 و 0.6 مل أ لتر علي التوالي بينما لم يؤثر مبيد أشوك علي المفترس كلية عليا النعناع الاخضر و النعناع الفلفلي و الشبث و الزعتر علي التوالي..
وبصفة عامة فإن المبيد الحيوي بيوكا كان أكثر المبيدات تأثيرا علي أفراد المفترس يليه الكراتر ثم مركب أشوك لم يثر علي أفراد المفترس.

3- تأثير بعض المركبات ضد المن علي النباتات السابقة تحت الظروف الحقلية
أظهرت الدراسة أن مبيد الكراتر أعطى أعلى نسبة خفض حيث كانت نسبة متوسط الخفض عموما 89.47، 80.61، 73.66 و 90.4% و 82.6، 77.6 و 87.6، 79.6 و 75.3% و 88.4 و 80.4 و 72.6 و 80.61، 73.66 و 90.4% و 82.6، 77.6 و 87.6، 79.6 و 75.3% و 88.4 و 80.4 و 72.6 عند تركيزات 0.6، 0.3، 0.1 مل أ لتر علي التوالي. بينما كانت نسبة متوسط الخفض لمبيد أشوك 81.03، 89.88، 80.4، 80.0 و 60.4، 55.7 و 58.8، 77.9 و 57.6 و 57.1 و 58.4، 80.4 عند تركيزات 3.7، 1.9، 0.9 و 0.6 مل أ لتر علي النعناع الاخضر و النعناع الفلفلي و الشبث و الزعتر علي التوالي. و بصفة عامة فإن المبيد الحيوي كراتر كان أكثر تأثيرا علي أفراد المن من المبيد الطبيعي أشوك. عليا النعناع الاخضر و النعناع الفلفلي و الشبث و الزعتر علي التوالي في السنة الاولى. اما في السنة الثانية كانت مثل السنة الاولى.

4- ودراسة الانتاج وتأثير هذه المركبات علي مدى الكفاءة الانتاجية لبعض النباتات الطبية و العطرية في محافظة الفيوم:
أظهرت النتائج أن مبيد الكراتر أعطى أعلى انتاجية يليه مركب أشوك خلال عامي الدراسه 2007 و 2008. ويهدف هذا البحث الي دراسة فاعلية بعض المركبات علي حشرات المن ومفترسها علي بعض النباتات الطبية و العطرية مثل (النعناع الاخضر و النعناع الفلفلي و الشبث و الزعتر) تحت الظروف المعملية و الحقلية خلال الموسمين 2007 و 2008 و أخذ النتائج قبل الرش مباشرة ثم بعد الرش 1، 3، 5، 7، يوم ودراسة الانتاج وتأثيرها علي مدى الكفاءة الانتاجية في محافظة الفيوم.