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EVALUATION OF SOME CHEMICAL PESTICIDES AND NATURAL OILS AGAINST *Thrips tabaci* (LIND.) ON ONION.

AbdEL-Hameed, Neama A.*; Afaf Abd EL-Wahab*; Asmaa Z. EL-Shakawy*; M.F. Haydar and Marwa M. Mousa**

1- Department of Zoology, Faculty of Science, AlAzhar University

2- Plant Protection Res. Inst., Agric. Research Center, Dokki, Cairo, Giza

ABSTRACT

Two experiments were carried out during the two successive seasons 2006/2007&2007/2008 at El-Santa district ,Gharbia Governorate to evaluate the efficiency of five materials (Actellic,Caple (2), Garlic oil, Mint oil, and Castor oil) against *Thrips tabaci*

It was obvious that the toxicity of Actellic, Caple (2) and Garlic oil were closely subsequent population reduction of 88.8%,82.4% and 75.8% were superior respectively.

Mint oil and Castor oil showed a moderate toxicity to the population of *T. tabaci* they caused 67.4% and 58.7% population reduction respectively.

These results concluded that successful control of *T. Tabaci* can be achieved by using Actellic,Caple(2)and Garlic oil at the rates of 2.5cm3/L.water ,10cm3/L.water and0.2cm3/L.water respectively.

INTRODUCTION

Onion thrips, *Thrips tabaci* (lind.) occurs in many parts of the world and, in Egypt is a serious pest of onion. The occosional severe damage of this pest, in certain years, could be attributed to: (a) suitable environmental condition, hence a large population of the insect in the field, (b) in adequacy of the insecticidal treatments of the infestation in the field.

Growers will increase profits by controlling thrips population ,monocrotophos (0.05%) was the most effective (Naik *et al*. (1989) and (Edelson *et al.* (1989).

The extensive use of chemical pesticides led to environmental pollution and subsequently toxicity of both farm animals and beneficial organisms (Srivastava *et al.* 2005).

On the other hand Boica *et al*.(2005) reported that the efficiency of the plant oils applied alone or in combination with insecticides in controlling *T. tabaci* under field condition are effective.

So that in the present investigation studying the control of *T.tabaci* on onion plantations in the two successive growing seasons (2006-2007 and 2007-2008). The main purpose of these trials was to determine the effect of pesticides tested in controlling the onion thrips under field conditions and throw same light on chemical control measure considering harmful effect on environment and human health.

MATERIALS AND METHODS

Experimental design:

Experiments were conducted at El santa district , Gharbia Governorate during two successive seasons (2006/2007)and (2007/2008)an area of one feddan was selected to be sowen in December 1,2007 and November 22,2008 with onion seeds .This area was devided in to plots each of 1/24 of feddan (15*10),(10 rows).Asplit plot design was adopted .

Four replicates (i.e.four plots) were made for each treatment .four un treated plots were taken as control .all normal agricultural practices were done during the two seasons.

Application by knap sack sprayer, (we take 20L.of water added to 60cm3of maxifier material which make the oil mixed with water Arialalkali potassium sulphate) which assigned against *T. tabaci* to study the effect of these oils.

Representative samples of the onion thrips:

Ten plants was taken randomly from each plot immediately before spray and after spray at days 1,3,5,7 and 10.

Materials used:

The tested pesticides were in table (1) as follow:

Table 1: Compound used against *Thrips tabaci* nymph

Rate/Liter water	Compound
10 cm	Caple(2)(Mineral oil)
0.2 cm	Garlic oil
1 cm	Castor oil
0.2 cm	Mint oil
2.5 cm	(Actellic) 50% EC. Primiphos-methyl
Without-treatment	Control

E.C. =emulsion concentration

Statistical analysis:

The percentage of reduction in the insect population of tested pest were calculated according to equation of (Henderson and tilton 1955) as following:

% reduction= 100*(1-B*A`/A*B`)

where B= No. of individuals in treated sample after spray

B`= No. of individuals in treated sample before spray

A= No. of individuals in control check after spray

A`= No. of individuals in control check before spray

RESULTS AND DISCUSSION

Effect of pesticides used on *Thrips tabaci*:

Experiments was designed to evaluate the efficiency of five treatments to control onion thrips in the field, compounds sprayed

The obtained data concerning field evaluation of treatments against *T.tabaci* are given in Table 2&3.

Results in table (2) season 2007 clearly indicated that, the tested oils varied in their efficiency against *T.tabaci*.

Generally, it was obvious that the tested oils caused remarkable reduction in the population density of *T.tabaci*. (24 hours). This reduction ranged between 63.2% in case of castor oil and 87% in case of Actellic on the 3rd day, the reduction ranged between 63.9% and 91.9% respectively, while on the 5th day it ranged between 62.5% and 91.5% and then decreased to 54.1% and 88% on the 7th day respectively while on the 10th day it ranged between 54% and 83.9% respectively.

Table (2): Efficiency of some pesticides and natural oils against *Thrips tabaci* lind. On onion plan season 2007.

Treatment	Rate/L water	Pre count or pre treatment	Initial kill after 24h.		Residual effect				Total	
			No.	% reduction	3 days	5 days	7 days	10 days	No.	% Reduction
Caple(2)	10 cm³	87.46	20.5	86.3	18.5	23	26	40	107.5	82.4
Castor oil	1cm³	79.13	50	63.2	48	52.1	61	67	228.1	58.7
Garlic oil	0.2Cm³	85.3	28	80.9	30	31	38	45.2	144.2	75.8
Mint oil	1cm³	86	40.2	72.8	38	40.5	56	61.2	195.7	67.4
Actellic	2.5cm³	81	18	87	11	12	16.5	24	63.5	88.8
Control	_	83.3	143.3	-	140	146.6	142	153.4	582	-

Sample size 10 plants **F calculated=210.1****
Location: El Gharbia Governorate **F tabulated0.05=2.14**
Season 2006/2007 **F tabulated0.01=2.92**
L.S.D0.05=3.9

Table (3): Efficiency of some pesticides and natural oils against *Thrips tabaci* lind. On onion plants season 2008.

Treatment	Rate/L. water	Pre count or pre treatment	Initial kill 24 hours		Residual effect 3 days	5 days	7 days	10 days	Total	
			No.	% reduction	No.	No.	No.	No.	No.	% Reduction
Caple(2)	10 cm³	130.8	25.2	86	19	21.8	28.1	41.2	110.1	83.3
Castor oil	1cm³	120	58.8	64.5	45.3	50.2	64.2	66	225.7	62.8
Garlic oil	0.2Cm³	128	33.9	80.8	30.9	31.5	38.2	44.8	145.4	77.56
Mint oil	1cm³	118.3	46.7	71.36	43.8	47.7	56.5	60.2	208.2	65.2
Actellic	2.5cm³	122	22.8	86.4	10.8	12.9	18.2	23.4	56.3	89.4
Control	_	124.6	171.8	-	139.7	177.2	172.8	141.2	630.9	-

Sample size 10 plants **F calculated=218.16****
Location El Gharbia governrate **F tabulated0.05=2.14**
Season 2007-2008 **F tabulated0.01=2.92**
L.S.D0.05=4.02

Actelic (2.5cm³/L.water), caple2(10cm³/L) and Garlic oil (0.2cm³/L) on onion plant recorded similarly the highest population reduction reaching 91.9%,87.4% and 79% respectively on the 3rd day following the performance of tested oil at intervals of 5,7 and 10 days, it was obvious that the three toxicants mentioned above had long persistence and still showed closely high population reduction, being 91.5,85,79.3% respectively after 5 days and 88,82.5,73.8% respectively. After 7 days. While after 10 days it was 83.9, 75.1, 71.2% res.

Mint oil (icm³/L.) came next causing 73.7% reduction, while castor oil (1cm³/L.) had the least residual effect showing only 54% population reduction after 10 days.

Regarding the efficiency of natural oils on the treated onion plants within 10 days, it was obvious that the toxicity of Actelic (2.5cm³/L.), caple2 (10 cm³/L.) and Garlic oil (0.2 cm³/L.) were closely subsequented causing population reduction of 88.8,82.4, 75.8% respectively.

Mint oil (1cm³/L.)showed a moderate toxicity to the population of *Thrips tabaci* after 10 days of treatment. They caused 67.4 and 58.7% population reduction, respectively.

These results were in agreement with many researches that study the effect of natural oils against Thrips population on onion plants in Karnal, India such as Gupta *et al.* (1984) recorded the effectiveness of sprays of emulsifiable concentrated and soil treatments with granules of 7 insecticides for the control of *Thrips tabaci* on onion crop.

Also agree with Mali *et al.* (1985) who investigated the efficiency of 2 insecticides against *Thrips tabaci* in field studies in onion. Naik *et al.* (1986) mentioned that sixteen insecticides were tested for the control of *Thrips tabaci* on onions in the field during rabi 1984 which were effective in reducing the pest population. Goncalves (1998) tested insecticides for the control of *Thrips tabaci* with the aim of finding products with lower toxicological class and chemical groups different from those already in use to reduce negative effects to man, the environment

The results of this study show clearly that the tested oils caused remarkable reduction in the population density of *T.tabaci* on the 10 days. this reduction ranged between 62.8% in case of castor oil and 83.3% in case of caple (2).

So that from this study control of this pest on onion can acheived agood successful depression to the population insect

On the other hand in addition to those oil pesticides protected onion during the growing season a producer , using caple(2) or garlic oil , may keep our environment with out any pollution .

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تقييم بعض المبيدات الكيميائية و الزيوت الطبيعية ضد حشرة تربس البصل على محصول البصل

نعمة أحمد عبد الحميد [١] ، عفاف عبد الوهاب [١] ، أسماء ذو الهمة الشرقاوى [٢]، محمد فوزى حيدر [٢] و مروة محمد موسى

١-قسم الحشرات -كلية العلوم-جامعة الأزهر

٢-معهد بحوث وقاية النباتات-الدقى -جيزة

أجريت تجربتان لأختبار فعالية خمسة مواد هى مبيد الأكتيليك والزيت المعدنى كابل(٢) وزيت الثوم وزيت النعناع وزيت الخروع ضد حشرة تربس البصل على محصول البصل فى عامى٢٠٠٧-٢٠٠٨ فى منطقة السنطة بمحافظة الغربية على الترتيب كما يلى وقد اتضح من النتائج أن هذة المواد أعطت نسبة ابادة(خفض فى التعداد) ٨٨,٨%،٨٢,٤%،٧٥,٨%،٦٧,٤%،٥٨,٧%.

وبهذا يمكن التوصية باستخدام الأكتيليك،والزيت المعدنى كابل (٢) وكذلك زيت الثوم بالتركيزات التالية على الترتيب ٢,٥سم٣/لتر ماء،٠,٢سم٣/لتر ماء . حيث أعطت نتائج جيدة فى مكافحة تربس البصل فى مزارع البصل .