J. Agric. Sci. Mansoura Univ., 29 (7): 4245 - 4251, 2004

THE EFFECT OF SOME NEW MITICIDES ON SPIDER MITES (*Tetranychus urticae*) AND THEIR SIDE EFFECT ON TRUE SPIDER IN CUCUMBER CROPS IN FAYUOM, EGYPT.

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ABSTRACT

Spider mites are generally controlled by synthetic acaricides, all of which offer effectively, but there is considerable interest in reducing or eliminating the use of synthetic pesticide to reduce the risk of residues on vegetable products, or to enable qualification for organic certification.(Abalon 40 cm^3/100 liter water), (Byby 200 cm^3/100 liter water), (Akoafol 250cm^3/100 liter water), (Opieron 250 cm^3/100 liter water), (Medamek 40 cm^3/100 liter water) and (Flwmait 50 cm^3/100 liter water), Provided the most consistent and timely suppression of spider mites over the test period. Selective use of these miticides can prevent resistance and result in effective management of the two-spotted spider mites. All of the treated plots were statistically better than the untreated control. All families of true spider their activities densities are reduced after spraying acaricides but can recovery quickly.

Keywords: two-spotted spider mites, *Tetranychus urticae*, True spider, Acaricides, (Abalon, Byby, Akoafol, Opieron, Medmek and Flwmait),

INTRODUCTION

Spider mites are serious pests for many vegetable crops grown in Egypt including cucumber, tomatoes, bean, and eggplant. These mites are also pests of a wide variety of other vegetables, fruits, and ornamental plants all over the world.

Spider mites cause serious economic damages to vegetable crops by feeding on foliage, the effect of which is to reduce photosynthesis, transpiration leaf chlorophyll content and leaf nitrogen, and increase transpiration (Golam, 2002)

Experiments were conducted in Fayoum 2003, to evaluate the performance of currently available miticides for two spotted spider mite management in cucumber.

Also study the effect of this type of management on activity and density of this true spider fauna.

The study was made possible through a grant from the Supported research create, Agricultural Research center, Ministry of Agriculture.

MATERIALS AND METHODS

The study area:

The experiment of 2003 season was conducted on the Fayoum. Treatments were arranged in randomized complete block designee with for replications. Synthetic acaricides treatments were initiated based upon state recommendations. The evaluated acaricides and used dosages were as follows:

1. Abalon 1.8 % (Abamactin) 40 cm^3/100 liter water.
2. Byby 20 % (Amitraz) 200 cm^3/100 liter water.
3. Akoafol 18.5 % (Dicofol) 250cm^3/100 liter water.
4. Opieron 24 % (Spiromesife) 250 cm^3/100 liter water.
5. Medamek 1.8 % (Abamactin) 40 cm^3/100 liter water.
6. Flwmait 20% (Flufenzinc) 50 cm^3/100 liter water.

Pest assessment:

Pre-treatment count was recorded before spraying for each treatment. Ten leaves were randomly collected from each plot (replicate) and spider mites were counted in a 1 $inch^2$ area.

The application date was 13 May and spider mites populations were evaluated on 14 May (1 dat), (3 dat), (7 dat), (14 dat), and (21 dat). Percentage of reduction was calculated according to Henderson and Tilton (1955)

Percentage of reduction = $-1 \times 100 \dfrac{Ta \times cb}{Tb \times ca}$

Where: Tb number before treatment in treated plot.
Ta number after treatment in treated plot.
Cb number before treatment in cheek plot.
Ca number after treatment in cheek plot.

Survey and populations of spider's cucumber fields:

Methods used to evaluate the side effect of this synthetic acaricides on true spider population percent:

Samples of true spider fauna were collected weekly, representing periods after treatment with synthetic acaricides. Collection of spider fauna took place by pit-fall trop method as described by Southwood (1978) and Slingsby and Cook (1986).

28 traps were placed in the cucumber field according to the arrangement of acaricides used.

RESULTS AND DISCUSSION

1- Family: Tetranychidae

A: spider mites *(Tetranychus urticae)*

Table (1) show that: abamactin (Abalon and medamek) 1.8 % decreased mite population in initial effect to 58.18, 70.70 %, respectively and the residual effect to 83.15, 88.48 %, respectively. But Dico fol (Akoafol) 18.5

% was more effective it decreased mite population as residual effect to 92.02 %.

Amitraz (Byby) 20%, Flufenzine (Flwmait) 20% were effected on mite population decreased in residual effect 89.48, 88.56 % respectively. But spiromesife 24 % (opieron) decreased mite population in initial effect after 1 day 73.55 % and residual effect 82.49 % after 21 days. This reduce spider mites was less than another synthetic acaricides.

By 21 days there were no treatment differences with respect to spider mites population. All treatments maintained mite populations, lower than the initial, its indicating there was no rebound in spider mite population.

The life cycle of the spider mite usually lasts 10 to 15 days; therefore the lack of difference could be attributed to natural population decline.

Table (1): Effect of tested materials against spider mite (*Tetranychus urticae*) on cucumber plant (season 2003)

Treatment	Pre-treatme-nt No./leaf	Initial effect After 1 day		Residual effect						
				No./leaf				Total	Mean	% R
		No./leaf	% R	3 days	7 days	14 days	21 days			
Abalone	27.66	18	58.18	11.7	1.5	12.55	10.1	35.85	8.96	83.15
Byby	24.65	4.4	88.55	4.9	3.4	4.2	7.5	20	5.0	89.48
Akoafol	24.58	8	79.13	5.9	2.53	6.4	5.6	15.12	3.78	92.02
Opieron	27.88	11.5	73.55	9.3	8.50	9.1	10.75	37.65	9.41	82.49
Medamek	24.40	11.15	70.70	7.8	2.38	5.5	6.0	21.68	5.42	88.48
Flwmait	25.08	6.6	83.13	8.4	7.40	3.0	3.3	22.1	5.53	88.56
Control	24.88	38.8	---	42.8	47.0	43.75	58.3	191.85	47.96	---

B: Spider mite egg:

Table (2) show that: the opieron treatment reduced spider mite egg populations in initial effect 58 % reduction and residual effect less than initial 3.99 % reduction. Also, Abalon reduce spider mite egg populations in initial to 96.67 % reduction and 81.92 % reduction in residual, but medamek give different effect in spite of it also Abamactin.

Table (2): Effect of tested materials against eggs of spider mites (*Tetranychus letoralis*) on cucumber plant (season 2003):

Treatment	Pre-treatme-nt No./leaf	Initial effect After 1 day		Residual effect						
				No./leaf				Total	Mean	% R
		No./leaf	% R	3 days	7 days	14 days	21 days			
Abalone	88.7	3	96.67	8.8	0.4	37.22	16.70	63.12	15.78	81.92
Byby	91.3	9.9	89.33	14.5	4.3	16.78	67.9	103.48	25.87	71.19
Akoafol	89.5	16.57	81.78	3.1	13.2	34.5	48.6	99.40	24.85	71.78
Opieron	86.4	36.6	58.35	64.6	85.22	61.5	115.1	326.42	81.61	3.99
Medamek	80.1	25.14	69.11	65.8	7.3	42.3	59.4	174.80	43.70	44.86
Flwmait	87.8	15.6	82.51	13.7	12.4	2.1	7.5	35.70	8.93	89.66
Control	87.9	89.3	---	83.7	120.38	51.2	90.65	345.93	86.48	---

This treatment reduces spider mite egg populations in initial to 69.11 % reduction and 44.86 % reduction in residual. This result mean that the different in formulation give different result.

All of the treatments reduced mite numbers below that found in the control plots by one week after treatment. Two weeks after application, all of the treatment continued to give excellent control.

2- True spider:

The True spider species recorded in this work Table (3), El-Hennawy (2002), Naglaa, Ghabour et al (1999) and Rahil (2000) indicated that these families were the most abundant in Egypt specialty in Fayoum region.

Table (3): Taxonomic list of True spider fauna in cucumber crops in Fayoum, 2003

Fam: Linyphiidae
Prinerigone vagans (Savigny, 1825)
Erigone dentipalpis (Wider, 1834)
Fam: Lycosidae
G_1
G_2
Fam: Philodromidae
Thanatus Sp.
Thanatus albini
Fam: Salticidae
Fam: Theridiidae
Fam: Dictynidae

Table (4) shows total activity and density of True spider under different acaricides spraying. One family was present only in two samples it was Salticidae. But Lycosidae was more abundant in all location especially control. Family Dictynidae found only in control part and disappeared in all treatment.

Akoafol treatments was more effect on reduction the numbers occur, and after 21 day True spider can not recovery in this plot.

Arnold and Potter (1987) indicated that, trap catches of predacious arthropods, specifically Araneae, stophtylinidae and Carabidae were significantly reduced by insecticides, Particularly in late-summer soil treatment with diazinon.

Table (4): Biodiversity of true spider families, genera and species in cucumber field effected by spraying different acaricides (2003)

Taxa	(1)						(2)						(3)						(4)						(5)						(6)						(7)					
	Sex		Age structure			Tn	Sex		Age structure			Tn	Sex		Age structure			Tn	Sex		Age structure			Tn	Sex		Age structure			Tn	Sex		Age structure			Tn	Sex		Age structure			Tn
	F	M	J*	s.ad	Ad		F	M	J*	s. ad	Ad		F	M	J*	s. ad	Ad		F	M	J*	s. ad	Ad		F	M	J*	s. ad	Ad		F	M	J*	s.ad	Ad		F	M	J*	s.ad	Ad	
Lycosidae			2			2			6			6			4			4			1			1			2			2			3			3						
G_1	1	1		1	1	2	1	4		3	2	5	1				1	1	2	1		2	1	3	2	1		1	2	3	1				1	1			4			4
G_2		1			1	1	1	1		2		2						0	1	1		1	1	2	1	1			2	2	1				1	1	1	1		1	1	2
Salticidae	1				1	1								1			1	1						0						0						1	1	2		3		3
Philodro-midae						0												0						0						0						0						0
Thanatus Sp						0			3			3						0						0						0						0						0
Thanatus albini						0						0						0						0						0						0						0
Dictymid-ae						0	1			1		1						0						0						0		1				1						0
Linyphiidae						0						0		1				1						0						0						0						0
Prinerigone vagans						0			3			3						0						0						0						0		1				1
Erigone dentipal-pis						0	1				1	1						0						0						0						0		1		1	1	1
Theridiid-ae						0			1			1						0			1			1						0		1			1	1		2		2		2
Total	2	2	2	1	3	6	4	5	13	6	3	22	1	1	5	0	2	7	3	2	2	3	2	7	3	2	2	1	4	7	2	1	4	0	3	7	2	6	5	6	2	13
Average						0.50						1.83						0.58						0.58						0.58						0.58						1.08

Plot:

1 Abalon 1.8 % (Abamactin)
2 Control
3 Byby 20 % (Amitraz)
4 Akoafol 18.5 % (Dicofol)
5 Opieron 24 % (Spiromesife)
6 Medamek 1.8 % (Abamactin)
7 Fiwmait 20% (Flufenzinc)

* = Juveniles can not be identified to more than family level.

Vacillation numbers on the control plot may be due to the effect of agricultural practices such as hoeing which are done prior to the time of cultivation and cause a reduction in the abundance and species diversity of soil animal (Wall work 1970).

Lycosidae are more frequent, showing a certain degree of resistance to acaricides.

Lycosidae was more abundant in control plot, Agnew and Smith (1989) indicated that Lycosidae were dependant on a closed plant canopy and most successful in irrigated fields' Populations of most species especially Lycosidae declined in drought.

Also Hussein (1999) studied the activity of spider fauna in vegetable crops, Lycosidae was the dominant family (86.42 %) followed by Philodromidae, Linyphidae and Genophosidae.

All families ware reduced after Flwmait application and return density like control plot after 21 days. Zedan et al (1993) indicated that recovery of and Monomorium sp. Was limited recovery after two month from the last insecticide application.

This study indicated that the dangers for user this Acpraicides for biodiversity of True spider fauna.

ACKNOWLEDGEMENTS

The authoress expresses sincere thanks to Mr. H.K.EL-Hennawy for Identification of spider.

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تأثيربعض المبيدات الأكاروسية الجديدة ضد العنكبوت الأحمرالعادى وتأثيراتها الجانبية على العناكب الحقيقية فى زراعات الخيار- الفيوم - مصر

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يمكن التحكم فى العنكبوت الأحمر باستخدام المبيدات الأكاروسية المتخصصة التى تعمل بشكل مؤثر وفعال فى خفض أو الحد من الإصابة ولكن بصورة أقل من إستخدام المبيدات الغير متخصصة ولكن خطورة إستخدام المبيدات غير المتخصصة على إنتاج الخضر جعل من المبيدات الأكاروسية أهمية للحصول على منتج عضوى خالى من المبيدات وصالح للحصول شهادات تمكنه من التصدير .

وفى هذه التجربة تم إستخدام المبيدات الأكاروسية المتخصصة مثل :

(أبالون - باى باى - أكوافول-ا بيرون - ميداميك - فلوميت)

وتم تطبيق كل التوصيات الخاصة بإستخدامها من حيث معدل الاستخدام ووقت التطبيق وتم تحديد أكثرهم كفاءة فى التحكم فى إعداد الأكاروس العنكبوت الأحمر وكذلك دراسة تأثيرها على العنكبوت الحقيقى كأحد المفترسات (أعداد طبيعية) التى تعمل على الحد من الأكاروس دون الإضرار بالتنوع الحيوى للعنكبوت الحقيقى للحفاظ عليه .