EVALUATION OF INSECTICIDAL SEED-TREATMENTS AGAINST SOME SUCKING PESTS WITH RESPECT TO THEIR ASSOCIATED BENEFICIAL ARTHROPODS

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ABSTRACT

The field trials were done to evaluate the insecticidal activity of imidacloprid and thiamethoxam as seed-treatments to protect cotton plants for a period of 7 weeks after sowing data against early season pests, during two successive growing cotton-seasons, 2003 and 2004. The results could be summarized in two main points as follows:

1.Evaluation of insecticidal seed-treatment against some sucking pests:

Both imidacloprid and thiamethoxam had relatively fast initial effects with long residual action against thrips, aphids and immature stages of whitefly, but moderate effect on Jassids and adults of whitefly. On the other hand, both compounds were not effective against spider mites, *Tetranychus* spp. and could be considered specific insecticides for controlling sucking pests as they are highly efficient against sucking pestes with low toxicity against the biological agents. Imidacloprid had relatively better efficiency against thrips than thiamethoxam and considered in general rather efficient in suppressing the population of some sucking insects on cotton seedling and its residual effect which lasted 7 weeks after application.

2. Evaluation of insecticidal seed-treatment against some main predators:

The insecticidal seed-treatment were evaluated against some main predators, and the results revealed that, imidacloprid and thiamethoxam had, in general, low toxic effect on the population density of the beneficial arthopodes. Based on the percent reduction of the tested predators, the current data revealed that there is no significant difference between both tested compounds in this respect. Both tested compounds could be considered specific insecticides for controlling sucking pests as they are highly efficient against sucking pests with low toxicity against the biological agents which play an important role in cotton IPM program, because they are one of the most limiting factors regulating and balancing with their host-pests which are mainly harmful pests.

INTRODUCTION

Cotton plants are liable to be attacked by several pests all over their life spans, i.e. early in the season, during seedling-stage, mid-season and in the late season during fruiting stage. In recent years cotton pests such as cotton aphids, *Aphis gossypii* (Glover); jassids, *Empoasca* spp., whitefly; *Bemisia tabaci* (Gen-nadius); thrips, *Thrips tabaci* and spider mites, *Tetranychus* spp., cause severe damage to cotton plants **(Holling, 1961; El-Nawawy *et al.*, 1980; Salama *et al.*, 1984 and Dent, 1991)**. They suck the sap of plant tissues, green leaves and young bolls and their saliva cause chemical disorders in plant tissues beside transmitting certain viral diseases.

It is well known that predators play a rather important role in natural control of certain pests attacking cotton plants. On the other hand, pesticides caused sever damage to most biological factors, which keep the balance and prevent the outbreak of pests. Selective pesticides, that can be used to control pests without adversely affecting natural enemies, are needed for modern pest management

The main objective of our study concerned with the evaluation of insecticidal seed-treatment as a new approach to control early sucking pests and to replace or supplemented the classical application of conventional pesticides.

MATERIALS AND METHODS

I-Test organisms:

1. Two-spotted spider mite, *Tetranychus urticae* (Koch):

A susceptible strain of two-spotted spider mite(obtained from the plant protection research institute, Agricultural Research Center, Dokki, Egypt) was reared in the laboratory according to **Dittrich (1962)**.

2. Cotton aphids, *Aphis gossypii* (Glov.):

A field strain of *Aphis gossypii* was collected early in the season from cotton field in Kafr El-Sheikh governorate and reared in the laboratory according to **Salama and Salem (1979).**

II. Insecticides:

1-Imidacloprid

[1-(6-chloro-3-pyridylmethyl)-N-nitroimidazolidin-2-ylideneranine].
Formulated sample (70%W.S) was supplied from Bayer Co. Germany.

2- Thiamethoxam:

[3-(-2-chloro-1,3-thiazol-5-ylmethyl)-5-methyl-1,3,5-oxadiazinen-4-ylidene (nitro) amine]. A formulated sample (70%W.S) was supplied from Sengenta Co.

III Treatments:

1.Experimental design and seed treatment:

The experimental design and seed treatments were done accordingh to the methods adviced by El-Dewy (2006).

2.Evaluation of insecticidal seed-treatments on aphids under laboratory conditions:

To evaluate the biological residual effect of imidacloprid and thiamethoxam against aphids under laboratory conditions, samples of the cotton seedlings were taken randomly from each treatment to the laboratory after 2, 3, 4, 5, 6, 7, 8, 9 and 10 weeks from cultivation.

For aphicidal test, cotton-seedling from each treatment were cut into discs each of 2 inches in diameter, then each disc was placed on cotton wool wetted with tap water and kept in 9-cm Petri-disch. Ten adults of aphids were transferred to the leaf disk by means of a fine brush. All petridishes containing the treated discs and aphids were kept under laboratory conditions. Each treatment was replicated 4 times.

The above steps were exactly repeated on cotton seedlings randomly taken from each treatment after 2, 3, 4, ... 10 weeks from sowing date. In all treatments, mortality counts were recorded after 24 hours and the initial activity (percent mortality after 1 week from sowing date) and residual activity (percent mortality after 2 to 10 weeks from sowing date).

3.Evaluation of insecticidal-treatments on mites under laboratory conditions:

This was done as follows. Cotton-seedlings were taken at random from each treatment after 1,2,3,4,5,6,7 weeks after sowing. A disc of two inches in diameter was cut form every treated leaf. This was replicated four times for each treatment. All discs were put separately on cotton wool wetted with tap water in 9 cm Petri-dish. Ten adult females from susceptible strain were transferred to each leaf disc by means of a fine brush. Petri-dishes containing the treated leaf discs containing mites were kept under laboratory conditions. Mortality counts were done after 24 hours

RESULTS AND DISCUSSION

The present work aims to evaluate the effectiveness of both imidacloprid and tbiamethoxam (applied as seed-treatment) against the previous harmful sucking pests as well as their associated natural enemies during two successive cotton growing seasons 2003/2004.

1. Evaluation of insecticidal seed-treatments against some sucking pests:

Data presented in Tables (1 and 2) clearly indicated that a part from *Tetranychus* spp., both tested insecticides showed significant reduction in the population of the other tested sucking pests. However, this reduction, fluctuated in magnitude from drastic drop (as in case of aphis and immature whitefly as their initial reductions ranged between 96.4-90.7 and between 98-96.6%, respectively) to moderate drop (initial reduction = 55.5-60.3%) as in case of the effect of thiamethoxam against thrips (Table 3).

Table (1) Average number and percent reduction of some sucking pests attacking cotton-seedling during 2003 cotton-season

Treatment	Pests	Average No. *						% Reduction at indicated weeks						Mean
		2	3	4	5	6	7	2	3	4	5	6	7	
Imida 2003	Aphids	2.5	2.0	2	1	5	2	89.6	94.3	86.7	83.3	58.3	33.3	74.2
	Thrips	36	30	23	12	7	118	93.3	84.9	54.0	5.5	22.2	10.6	56.2
	Jassids	2	2.0	2	8	16	22	50	50	50	38.5	33.3	8.3	36.0
	Whitefly (im)	0.0	2.0	31	35	7	3	100	97.5	73.9	65	30	25	65.2
	Whitefly (ad)	1	12	3	99	80	175	80	62.5	50	38.9	20.8	0.0	42.0
	Spider mits	40	40	44	39	50	68	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thiam 2003	Aphids	6	7	3	3.5	8	2	75	80	80	41.7	33.3	33.3	57.2
	Thrips	189	82	27	16	8	128	65	58.8	46	27.3	11.1	3	35.2
	Jassids	2	2.0	2	9	16	23	50	50	50	30.8	33.3	4.2	33.7
	Whitefly (im)	0.0	2.0	19	57	6	3	100	97.5	84	43	40	25	64.9
	Whitefly (ad)	2	15	4	138	87	222	60	53.1	33.3	14.9	13.9	0.0	29.2
	Spider mits	35	44	50	51	34	66	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control 2003	Aphids	24	35	15	6	12	3							
	Thrips	540	199	50	22	9	132							
	Jassids	4	4.0	4	18	24	24							
	Whitefly (im)	1	80	119	100	10	4							
	Whitefly (ad)	5	32	6	162	101	125							
	Spider mits	18	40	44	33	24	66							

Imida = Imidacloprid, Thiam = Thiamethoxam, im = immature stage, ad= adult stage. * Average No. of pest/100 cotton seedling at indicated weeks

Table (2) Average number and percent reduction of some sucking pests attacking cotton-seedling during 2004 cotton-season

Treatment	Pests	Average No. *						% Reduction at indicated weeks						Mean
		2	3	4	5	6	7	2	3	4	5	6	7	
Imida 2004	Aphids	3.4	1.0	2.5	5.5	24	2.5	91.7	97	93.2	78.2	51	16.7	71.3
	Thrips	11	42	147	185	252	120	89.1	91.3	55.7	41.3	27.6	14.9	53.3
	Jassids	1.0	1.0	7	32	58	112	50	50	56.3	53.6	37.6	7.4	41
	Whitefly (im)	3	8	9	15	22	8	95.9	86.2	80.4	79.5	60.7	33.3	72.7
	Whitefly (ad)	-	-	-	-	-	-	-	-	-	-	-	-	-
	Spider mits	48	41	95	39	64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thiam 2004	Aphids	7	20	2.0	11	27	1.0	82.9	97	94.6	56	44.9	33.3	68.1
	Thrips	45	192	203	241	296	1293	55.5	60.2	38.9	23.5	14.9	0.0	32.2
	Jassids	1	1.0	10	41	66	123	50	50	37.5	40.6	29	0.0	31.4
	Whitefly (im)	5	13	19	28	24	8	93.2	77.6	58.7	61.6	57.1	33.3	63.6
	Whitefly (ad)	-	-	-	-	-	-	-	-	-	-	-	-	-
	Spider mits	50	19	44	20	34	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control 2004	Aphids	41	66	37	25	49	3.0							
	Thrips	101	482	332	315	348	141							
	Jassids	2	2	16	69	93	121							
	Whitefly (im)	73	58	46	73	56	12							
	Whitefly (ad)	-	-	-	-	-	-							
	Spider mits	13	9	7	7	15	-							

Imida = Imidacloprid, Thiam = Thiamethoxam, im = immature stage, ad= adult stage. * Average No. of pest/100 cotton seedling at indicated weeks

The data presented in Tables (1-3) revealed, that the initial efficiency of imidacloprid during both seasons ranged approximately between 93-89, 89.6-91.7, 50, 95.9-100 and 80% for thrips, aphids, jassids, immature and adult stages of whitefly, respectively. The percentages of reduction of sucking pests populations in all treatments including untreated control, decreased gradually until 7 weeks after sowing. However, the general mean of percent reduction of imidacloprid ranged between 53.3-56.2, 71.3-74.2, 36.0-41, 65.2-72.7 and 42% for thrips, aphids, jassids, immature and adult stages of whitefly during both seasons, respectively. In case of thiamethoxam, the initial reductions were 55.5-65, 75-82.9, 50, 93.2-100 and 60% for thrips, aphids, jassids and immature stage of whitefly and adult of whitefly during 2003 and 2004 cotton seasons, respectively. Also, the percentages of reduction decreased gradually until 7 weeks after sowing. The general mean of percent reduction of thiamethoxam. were: 35.2-32.2, 57.2-68.1, 31.4-33.7, 63.6-64.9 and 29.2% for thrips, aphids, jassids,

immature and adult stages of whitefly during both cotton seasons, respectively.

Table (3) Average percent reduction of some sucking pests attacking cotton-seedling during 2003 and 2004 cotton-season

Treatment	Pests	Average No. **						% Reduction at indicated weeks						Mean	
		In*	3	4	5	6	7	In*	3	4	5	6	7	In*	R
Imida 2004	Aphids	89.6	94.3	86.7	83.3	58.3	33.3	91.7	97	93.2	78.2	51	16.7	90.7	69.2
	Thrips	93.3	84.9	54	54.4	22.2	10.6	89.1	91.3	55.7	41.3	27.6	14.9	91.2	45.7
	Jassids	50	50	50	38.5	33.3	8.3	50	50	56.3.	53.6	37.6	7.4	50	33.1
	Whitefly (im)	100	97.5	73.9	65	30	25	95.9	86.2	80.4	79.5	60.7	33.3	98	63.2
	Whitefly (ad)	80	62.5	50	38.9	20.8	0.0	-	-	-	-	-	-	80	27.4
	Spider mits	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thiam 2004	Aphids	95.1	80	80	41.7	33.3	33.3	97.6	97	94.6	56	44.9	33.3	96.4	59.4
	Thrips	65	58.8	46	27.3	11.1	3	55.5	60.2	38.9	23.5	14.9	0.0	60.3	28.4
	Jassids	50	50	50	30.8	33.3	4.2	50	50	37.5	40.6	29	0.0	50	32.5
	Whitefly (im)	100	97.5	84	43	40.0	25	93.2	77.6	58.7	61.6	57.1	33.3	96.6	57.8
	Whitefly (ad)	60	53.1	33.3	14.9	13.9	0.0	-	-	-	-	-	-	60	23.0
	Spider mits	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Imida = Imidacloprid, Thiam = Thiamethoxam, in = immature stage, ad= adult stage,
R = Residual, In* = initial, ** Average No. of pest/100 cotton seedling at indicated weeks

It is very important to mention that it was noticed during investigation that the actual number of aphids is relatively low. This might lead to falls data. In other words, if the number of aphids present on treated cotton-seedlings equal zero, this might be due to either unfavourable weathering conditions or due to the insecticidal toxic potential in the treated seedlings. However, to avoid such obscure the same treatment was done under field conditions as usual and the treated cotton seedlings were randomly taken from each treatment after certain times to the lab and subjected to artificial infestation by transferring 10 adults aphids to each leaf disk and kept under laboratory conditions until recording the percent mortality as well discussed later.

Concerning the evaluation of insecticidal seed-treatment on aphids under laboratory conditions, the data presented in Table (4) showed that, the initial activity of imidacloprid and thiamethoxam were 80.0 and 60.0%, respectively, while means of residues of both imidacloprid and thiamethoxam were 34.9 and 22.8% respectively. These results confirmed our previous results owing the efficiency of both compounds against aphids under field conditions. There is a significant deference between imidacloprid and thiamethoxam in their effects.

Table (4): Effectiveness of insecticidal seed-treatments on cotton aphid (*A. gossypii*) after different periods from sowing date under laboratory conditions

Treatment	Average number of aphids after 24hr. from feeding on preteated seeding at the indicated weeks after sowing									
	1 W	2	3	4	5	6	7	8	9	10
Imida	8	15	18	23	25	28	30	35	36	40
Thiam	16	21	23	26	28	32	34	35	39	40
Control	40	40	40	40	40	40	40	40	40	40

Imida = Imidacloprid, Thiam = Thiamethoxam, W = week

Table (4): Continued

Treatment	Percent mortality after 24 hours										R
	In*	Residual activity									
		1 W	2	3	4	5	6	7	8	9	10	
Imida	80.0[a]	62.5	55	42.5	37.5	30	25	12.5	10	0.0	0.0	34.9[a]
Thiam	60.0[b]	47.5	42.5	35	30	20	15	12.5	2.5	0.0	0.0	22.8[b]
Control	40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Imida = Imidacloprid, Thiam = Thiamethoxam In* = initial activity: Percent mortality after 1 week from sowing date, R = Residual activity: Percent mortality after 2 to 10 week from sowing date, W = week

Reviewing the current results one could fairly conclude that both imidacloprid and thiamethoxam had relatively fast initial effects with long residual action against thrips, aphids and immature stages of whitefly but moderate effect on jassids and adult stages of whitefly. The discrepancy of the efficiency of both tested insecticides against the immature and mature stages of whitefly was expected. The adults almost visit cotton plants early in the morning to feed and then leave the seedlings to hide in the serounding crops. Thus, the adults keep in contact with the treated seedlings for relatively short time to feed, while the immature stages almost being found in continuous contact with the treated seedlings, the way, which obliged the immature stages to be exposed to the toxicants for relatively long time and subsequently to pick up more toxicants. Imidacloprid had better efficiency against thrips than thiamethoxam. It protected cotton seedligs from sap sucking insects (e.g. thrips, aphids and whitefly). However the current results proved that both tested insecticides have systemic and residual

effects against *Thrips tabaci*. Our results also revealed that imidacloprid is rather efficient in suppressing the population of some sucking insects on cotton seedlings and the residual effect lasted for 7 weeks after application.

Our results agreed fully with the previous findings of many investigators who evaluated the efficiency of both imidacloprid and thiamethoxam on early cotton sucking pests **(Eissa, 1991; Attique and Ghaffar, 1996; Emara, 1996; Zang *et al.*, 1998; Abdel-Meguid *et al*, 1999; Lentz *et al.*, 2000; Mathirajan and Regupathy, 2001a). Mathirajan and Regupathy (2001b)** mentioned that thiamethoxam and imidacloprid were equally effective in reducing pest populations of aphids, jassids and whitefly. Imidacloprid was most effective for up to 56 days after germination **(Satpute *et al.*, 2001),** while thiamethoxam was effective for up to 28 days after germination. **Aioub *et al.*, (2002)** reported that imidacloprid protected cotton seedlings from sap sucking insects (whitefly, aphids and thrips) for at least 10 weeks from the onset of seed planting. However, **Dhandapani *et al.*, (2002)** mentioned that imidacloprid controlled the sucking Pests attacking cotton (aphids, dirips and jassid) up to 8 weeks after sowing.

Concerning the effect of both imidaclopid and thiamethoxam against the attack of spider mites, *Tetranychus* spp, the date are presented in Tables (1-3). It is quite clear that the number of mites on the experimental area during both cotton seasons are high enough to produced deleterious effects and to conduct the experiment, but the number of mites found on 100 cotton-seedling after one week of sowing up to the end of the treatment increased significantly indicating that both imidaclopfid and thiamethoxam are not effective against spider Mites (Tables 1 and 2). In spite of conducting the experiment in 2 successive cotton-seasons, but the obtained data reconfirmed that both tested compounds failed to control the spider mites. Based on percent reduction (Table 3) as a good parameter for insecticidal potency, both tested compounds failed to control the mites as their percent reductions equal zero in all cases (either initial or residual). This result agreed fully with the previous finding of **Hamid *et al.*, (2003)** who revealed that the population density of spider mite increase in imidacloprid and thiamethoxam treatment wither pre-thinning or post-thinning compared with untreated check.

A question raised in mined about the possibility of existing resistant or highly tolerant strains of spider mites in Kafr El-Sheikh which might be behind the failure of tested compounds to control the pest? For this reason

confirmative treatment was done using a pretreated seedlings collected randomly from each field treatments after 1,2,3,4,5,6 and 7 weeks after sowing and transferred to the laboratory to be subjected to artificial infestation with susceptible strain of mite.

Table (5) Effectiveness of seed-treatments on susceptible strain of spider mites after different periods from sowing date in laboratory

Treatment	Average number of spider mites after 24 hours							Percent mortality after 24 hours							Mean
	1 W	2	3	4	5	6	7	1	72	3	4	5	6	7	
Imida	40	40	40	40	40	40	40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thiam	40	40	40	40	40	40	40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control	40	40	40	40	40	40	40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Imida = Imidacloprid, Thiam = Thiamethoxam, W = week

Precise investigation of the data presented in Table (5) showed that both imidacloprid and thiamethoxam were not effective against spider mites, *Tetranychus* spp. as their percentage of reduction equal zero. Our results agreed with that obtained by **Keddis *et al.*, (1993)** who reported that imidacloprid had a poor effect against the mites *T. arabicus* (Attiah). Moreover, **Aioub *et al.*, (2002)** mentioned that imidacloprid was not able to protect cotton-seedlings from the attack of both jassids and mites.

2. Evaluation of insecticidal seed-treatments against some main predators commonly found in cotton fields:

The beneficial pests play an important role in cotton IPM program, because they are one of the most limiting factors regulating and balancing with their host-pests which are mainly harmful pests.

Although there are many predators prevailing cotton fields, but among the most effective predators commonly found in cotton-fields are: true spider mite, *Coccimella undecimpunctata* (Reiche), *Scymnus* spp., *Paederus affierii* (Koch), *Chrysoperla carnea* (Steph) and *Orius* spp. **(Salama *et al.*, 2006).**

It is necessary to mention that, due to the unexpected low population densities of the predators, this study was concerned with the average sum pool of three of the relatively most abundant ones namely: true spiders, *Scymnus* sp. and *Coccienella* sp. Moreover, the first record of predators during 2003 occurred after 3 weeks from sowing (Table 6). The data also showed that the changes in the population densities of the tested predators

varied greatly during the same season. In general, the populations of both predators and their hosts started to increase gradually from April to August due to their migration from clover-fields to the neighboring cotton plants. This phenomenon is in agreement with that found by **El-Heneidy *et al.*, (1979).**

Table (6) Average sum pool of three predators*/20 cotton seedling, their percent reduction (-) or build up (+) after different periods from sowing during 2003 and 2004 cotton-seasons.

Treatment	No. of predators/20 cotton seedlings after the following periods from sowing							% Reduction (-) or build up (+) after the following periods							Total % red.	Mean % red.
	1 W	2	3	4	5	6	7	1	2	3	4	5	6	7		
During 2003 cotton-season:																
Imida	0.0	0.0	4	8	17	13	38.2	0.0	0	63.6	33.3	22.7	31.6	+63.6	151.2	30.20
Thiam	0.0	0.0	4	6	17	9	38.0	0.0	0	63.6	50	22.7	52.6	+64.3	188.6	37.80
Control	0.0	0.0	11	12	22	19	28									
During 2004 cotton-season:																
Imida	1	1	1	5	7	53	65	+100	0	50	37.5	22.2	41.1	18.8	169.6	28.2
Thiam	0.0	1	1	4	6	44	52	0.0	0	50	50	33.3	51.1	35.0	219.4	31.3
Control	0.0	1	2	8	9	90	80									

* predators = the average sum pool of 3 predators namely: true spider, *Scymnus* sp. and *Coccinella* sp., Imida = Imidacloprid, Thiam = Thiamethoxam, W = week

It is of great interest to mention that during both cotton-seasons the population densities of tested predators fluctuated up and down all over the seasons. In term of figures, the percent reductions resulted form imidacloprid during 2003 cotton-season are: 0.0, 0.0, 63.6, 33.3, 22.7, 31.6 and (+) 63.6% after 1, 2, 3, 4, 5, 6, and 7 weeks, respectively (Table 6). These fluctuations coincided with the average numbers of insect-hosts rather than the effect of tested insecticides for the following reasons:

1. The effect of any insecticide should be dosage-dependent or time of exposure dependent. In the current cases the percent of reduction jumped from zero percentage at the first and 2nd weeks to be 63.6% at the 3rd week then drop drastically to 22.7% after the fifth week then increased again to 31.6% after the 6th weeks. Moreover, the population

size and the predators continued in their increase to reach a level of build up since the number of predators in treatment become more than the corresponding values of the control, This phenomenon could be noticed with all treatments.

2.The percent of reduction after 7 weeks resulted from both imidacloprid and thiamethoxani during 2004 cotton-season are 18.8 and 35%, respectively. While the corresponding values during 2003 are two cases of build up equal to +63.6 and +64.3, respectively. This unreliable data confirmed that such fluctuation never result from the effect of toxic compounds and might be due to the interaction of weathering, host abundant and size of the predators.

Reviewing the results presented in Table it could concluded that. Both tested compounds, in general, had low toxic effect on the population density of the beneficial pests. Both tested compounds could be considered specific insecticides for controlling sticking pests, as they are highly efficient against sucking pests with low toxicity against the biological agents. Based on the percent reduction of tested predators, the current date revealed that there is no si0ficant difference between both tested insecticides in this respect. However, the current results agreed with the finding of **Attique and Ghaffar (1996)** who mentioned that predator population in the treated pots were lower than in the untreated control. **Abdel-Meguid *et al.*, (1999)** found that imidacloprid had low effect on the population density of the beneficial insects. Moreover, **Hamid *el al.*, (2003)** reported that imidacloprid and thiamethoxan have no significant effect on population density of different predators in both treatments, pre-thinning and post-thinning compared with untreated check throughout the scouting periods.

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الملخص العربي

تقييم معاملة البذرة بالمبيدات ضدّ بعض الافات الثاقبة الماصة وكذلك المفترسات المصاحبة لها من رتبة الارثروبودا

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قسم المبيدات ـــ كلية الزراعة ـــ بكفر الشيخ ـــ جامعة كفر الشيخ

معهد بحوث وقاية النبات – الدقى – الجيزة – القاهرة

تم اجراء بعض التجارب الحقلية لمدة موسمين زراعين متتالين لتقيم كفاءة كلا من مبيد الاميداكلوبريد ومبيد سياميثوكسام مع البذور لحماية نبات القطن لفترة ٧ اسابيع من الاصابة ببعض الافات الثاقبة الماصة التى تهاجم نبات القطن فى بداية الموسم الزراعى. وقد اوضحت النتائج المتحصل عليها انه بالرغم من الكفاءة الفورية العالية التى اظهرها كلا المركبين والتى استمرت لفترة طويلى (٧ اسابيع من المعاملة) ضد حشرات التربس والمن والاطوار غير البالغة من الذبابة البيضاء ،الا ان فعاليتها كانت متوسطة ضد الجاسيد والطور الكامل للذبابة البيضاء ومعدومة ضد افة العنكبوت الاحمر.

كذلك تم تقيم هذه المعاملات على بعض المفترسات الموجودة فى حقول القطن ، وقد اظهرت النتائج ان كلا المبيدين متميزان بسمية منخفضة على هذه المفترسات التى تعتبر عنصر اساسى وفعال للحفاظ على وجود اتزان مع الافات ومنع حدوث فورانها.

من ذلك يتضح ان هذين المبيدين يمكن اعتبارهما من المبيدات المتخصصه وذات الفعالية العالية على الافات الثاقبة الماصة وسمية منخفضة على المفترسات والاعداء الحيوية. وعلى ذلك فانه ينصح باستخدامها فى برامج المكافحة المتكاملة لحماية محصول القطن.