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TOXICITY OF SOME CHEMICAL COMPOUNDS ON APHIDS, *Aphis gossypii* (GLOVER) AND WHITEFLY, *Bemisia tabaci*, (GENN.) INFESTING COTTON PLANTS AND ITS ASSOCIATED NATURAL ENEMIES.

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ABSTRACT

Several problems in controlling pests as well as pollution is have been risen from the intensive use of insecticides. Therefore, this work was Carried out at Sakha Agricultral Research Station during 2007 and 2008 cotton growing seasons to evaluate the initial and residual effect of some chitin-synthesis inhibitors (diafenthiuron and buprofezin), and the dinitromethelin derivative Amidor (imidacloprid) and the mineral oil (KZ-oil) against the cotton aphid, *Aphis gossypii*. In addition it was planned to evaluate the initial and residual effect of Anjio (thiamethoxam + lambdacyhalothrin), Amidor (imidacloprid) and KZ-oil, on the whitefly *Bemisia tabaci* (adult and immature stages) and their associated natural enemies. Results showed that imidacloprid induced the highest initial and residual reduction giving (95.8 – 98.8%) in the first season and (96.8 – 98.9%) in the second season against the cotton aphid, while buprofezin (Applaud) came in the second order recording (80.5 – 90.3%) in the first season, and (80.3 – 88.7%) in the second season. While, the initial and residual activity of diafenthiuron (Polo) was (68.5 – 90.9% reduction) in the first season and (66.02 – 84.9%) in the second season.

KZ – oil induced a moderate initial and residual effect, where it exhibited (63.7 – 64.6%) and (65.1 – 65.3%) reduction in the two seasons respectively .

As for the effect of thiamethoxam+ lambdacyhalothrin, imidacloprid and KZ – oil against the white fly *B. tabaci* mature stage , thiamethoxam+ lambdacyhalothrin induced the highest initial reduction giving 73.3 and 76.3% in the two seasons respectively, followed by Amidor (72.7 and 69.9%, respectively) and KZ – oil (68.5 and 69.1% respectively). While, thiamethoxam+ lambdacyhalothrin induced the highest residual activity (80.03 and 78.1% reduction) in the two seasons respectively, followed by KZ – oil (72.2 and 74.9% reduction) and thiamethoxam+ lambdacyhalothrin (70.8 and 70.9% reduction) in the two seasons , respectively. Regarding the effect on immature stage thiamethoxam+ lambdacyhalothrin induced the highest initial effect in the two seasons (76.2 and 86.3% reduction) respectively, followed by imidacloprid and KZ – oil which gave (71.9 and 59.9% reduction) and (72.2 – 64.8% reduction) in the first and second seasons. On the other hand imidacloprid induced the highest residual effect in the two seasons giving 77.06% and 75.7%, respectively, followed by KZ – oil recorded 74.7 and 75.6% , respectively, and thiamethoxam+ lambdacyhalothrin gave 74.4 and 74.3% , respectively. As for the side effect on the associated natural enemies, (*chrysopa sp., paederus alfierii, orius spp., scymnus spp. and true spider*), thiamethoxam+ lambdacyhalothrin was the most effective one on the population density of predators followed by diafenthiuron, buprofzin and KZ – oil while imidacloprid had the weakest effect. Thus, imidacloprid can be used in the integrated pest management programs to control both aphids, and different stages of whitefly, especially it was safe to the natural enemies.

INTRODUCTION

Cotton *(Gossypium barbadense L.)* is considered the important crop in the agricultural strategy of Egypt. It is attacked by several piercing – sucking pests resulting in severe damage throught all stages of its growth. The piercing – sucking insect especially cotton Aphid, *Aphis gossypii.* (Glov.) and the whitefly, *Bemisia tabaci* (Genn.) damage plants in several ways including direct damage from feeding the suck sap of plant tissues, production of massive of honey-dew up on which sooty mold fungus can grow leading to transmission of viruses (Costa and Brown 1991). Heavy infestation with these insects causes extensive reduction in cotton yield and quality (Guirgus *et al.*, 1975, Butler *et al.*, 1986, Andrews and kitten, 1989 and Harris *et al.*, 1992) and increasing production costs (Hardee and O, Brein, 1990). Therefore, chemical control by conventional insecticides such as O.P's., carbamates and synthetic pyrethroids were not efficient in controlling these pests for a long time, because of development of resistance. The introduction of IGRs and some mineral oils for controlling such pests were necessary to overcome such phenomena. Several authours as Radwan *et al.*, 1985, Radwan *et al.*, 1990, Ohno, 1992, Korkor *et al.*, 1995, El-Hamady 1997, Wells *et al.*, 1998, Albuquerque *et al.*, 1999, Mathirajan and Regupathy 2001, Aioub *et al.*, 2002, Dhandpani *et al.*, 2002, Sharaf and El-Basyouni 2002, Sharaf *et al.*, 2003, El-Zahi, 2005, El-Dewy 2006, and Zidan *et al.*, 2008 had studied the effect of different products on aphids and whitefly, population densities. The present work aimed to study the effect of four compounds that belong to different chemical groups against the aphids and three compounds against the whitefly and their side effect on their predators .

MATERIALS AND METHODS

The experiment was carried out during 2007 and 2008 cotton growing seasons at Sakha Agricultural Research Station, Farm, Kafr El-Sheikh Governorate.

The chemicals used and their rates of application were as follows:

1- Imidacloprid (Amidor), 20% SC, 1-(6-chloro-3-pyridinyl) methyl] – N- nitro-2-imidazolidinimine, at 50 ml/ 100 L.
2- Diafenthiuron (Polo), 50% SC, N-[2,6-bis(1-methylethyl)-4-phenoxy phenyl]-N- (1,1-dimethyl) thiourea at 300 ml/fed.
3- Buprofezin (Applaud) 25% Ec, 2-[1,1-dimethylethyl) imino] tetrahydro-3-(1-methylethyl) 5-phenyl-4H-1,3,5-thiadiazin-4-one, at 600 ml/fed.
4- Anjio 24-7% SC, (thiamethoxam + lambdacyhalo thrin), at the rate of 80 cm^3/fed.
5- KZ-oil 95% Ec at rat L/100L.

To determine the efficiency of the chemical treatments against some piercing sucking pests, such as the cotton aphid, *Aphis gossypii* and the whitefly, *Bemisia tabaci* (mature and immurate stages) and their associated natural enemies, field was cultivated with Giza 86 cotton variety. Cotton seeds were sown in the first of April in both seasons. All normal agriculture

practices and fertilizers were followed. The tested insecticides were sprayed at their recommended rates. Treatments were distributed in a complete randomized block design with four replicates, each of one kerate area ($175m^2$) and four kerates were used as untreated check. Samples of 25 cotton leaves per replicate were randomly collected from the bottom, the middle and the top of cotton plants (2 + 1 + 2 leaves per plant, respectively). The upper and lower leaf surfaces were inspected in the field and the number of aphids and whitefly adults were recorded. The same samples were taken to the laboratory to count the number of immature stages of whitefly using binocular microscope. Leaf sampling and insect counting were made just before spray and then after 2, 5, 8, 11 and 14 days after spraying.

Associated predators also were counted on 100 cotton plants, percent reduction of population was estimated by using Henderson and Tilton equation (1955) to determine the initial effect (after 2 days of spraying) and the residual effect of the tested compounds. Statistical analysis was mad to show if there are significant differences among treatments or not , according to Duncan (1955).

RESULTS AND DISCUSSIONS

I Initial and residual activity of the tested compounds against *Aphis gossypii* and *Bemisia tabaci* infesting cotton plants during 2007 and 2008 cotton seasons.

Data presented in Table (1) show the initial and residual effect of the four tested compounds sprayed on cotton plants, against *Aphis gossypii* during 2007 and 2008 cotton seasons.

Concerning the initial activity (% reduction 2 days after spray) in 2007 season, imidacloprid was proved to be superior compound recording the highest initial activity 95.8%, buprofezin came in the second order recording 80.5%, while the initial activity of diafenthiuron and KZ-oil were 68.5 and 63.7, respectively. While, bio-residual activity of imidacloprid, diafenthiuron, Buprofezin, and KZ-oil were 98.8, 90.9, 90.3, and 61.4%, as means of % reduction at 5,8,11and 14 days after spraying , respectively.

In season 2008, the tested compounds showed the same trend of season 2007, imidacloprid gave the highest initial activity (96.8%) followed by buprofezin (80.3%), diafenthiuron (66.02) and KZ-oil (65.1%). The residual effect of imidacloprid was 98.9%, while buprofezin and diafenthiuron came in the second order recording 88.7% and 84.9%, respectively. On the other hand KZ-oil gave moderate reduction recording 65.3%.

These results are in a harmony with those of Wang *et al.* (1995) who showed that aphids were controlled with imidacloprid 37.59/ha. After 5 days control was above 95%, after 7-10 days, control was still above 90% reduction. Mangoud *et al.* (2004) reported that super Misroma oil gave medium reduction against A. *gossypii*. Also, El-Zahi (2005) stated that imidacloprid proved to be the most effective in controlling the cotton aphids causing 96.8% initial kill while 95.6% reduction as general mean of effect Also, KZ-oil was the least effective one against aphid. The results of El-Dewy

(2006) indicated that, imidacloprid and diafenthiuron were effective against cotton aphids.

Data presented in Tables (2 and 3) summarized the toxic effect of the three compounds thiamethoxam + lambdacyhalothrin, imidacloprid and KZ-oil) against whitefly mature and immature stages infestation during 2007 and 2008 cotton seasons.

Data in Table (2) revealed that the initial and residual activities of the tested compounds on adult stage of *Bemisia tabaci* are similar during 2007 and 2008 seasons. In 2007 season, thiamethoxam + lambdacyhalothrin gave the highest initial effect giving 73.3% followed by imidacloprid 72.7% and KZ-oil 68.5% respectively. With regard to the residual effect of these compounds, data revealed that imidacloprid showed the highest residual effect with percent reduction of (80.03%), while KZ-oil and thiamethoxam + lambdacyhalothrin came in the second order with percent reduction values of 72.2% and 70.8%, respectively. Regarding the general mean of % reduction, imidacloprid, KZ-oil and thiamethoxam + lambdacyhalothrin recorded 78.6, 71.5 and 71.3%, respectively.

In 2008 cotton season, the tested compounds showed the same trend of results of 2007 season, where thiamethoxam + lambdacyhalothrin gave the highest initial activity (76.3%) followed by imidacloprid (69.9%) and KZ-oil (69.1%). On the other hand, imidacloprid showed the highest residual effect with percent reduction of (78.1%), while KZ-oil and Anjio came in the second order with percent reduction values of 74.9% and 70.9%, respectively.

The general mean of reduction for imidacloprid, KZ-oil and Anjio was 76.22, 73.7 and 72.04%, respectively.

Data presented in Table (3) showed the initial and residual activities of the tested compounds against immature stages of B. tabaci during 2007 and 2008 seasons. In season 2007, thiamethoxam + lambdacyhalothrin has the highest initial activity, recording 76.2% reduction followed by imidacloprid (71.9%) and KZ-oil (59.9%). With regard to the residual effect of these compounds, data revealed that imidacloprid showed the highest residual effect with percent reduction of 77.06% followed by KZ – oil (74.7%) and thiamethoxam + lambdacyhalothrin (74.4%). Concerning general means of reduction imidacloprid, thiamethoxam + lambdacyhalothrin and KZ – oil was 76.02, 74.8 and 71.8%, respectively. In season 2008, the tested compounds showed the same trend of results in season 2007, where, thiamethoxam + lambdacyhalothrin was the highest effective one , with initial kill of (86.3%), while both imidacloprid and KZ – oil caused 72.2 and 64.8%, respectively. Concerning the residual effect of these compounds, data revealed that imidacloprid showed the highest residual effect with percent reduction of (75.7%) followed by KZ – oil (75.6%) and thiamethoxam + lambdacyhalothrin (74.3%), respectively. The general mean of reduction for thiamethoxam + lambdacyhalothrin, imidacloprid and KZ – oil was 76.7, 74.9 and 73.4%, respectively. The current results agree with the finding of many investigators, Sharaf *et al.* (2003)who showed that Confidor induced the highest initial and residual activity giving 84.2 and 82.7% reduction, respectively, against immature stage of the whitefly. While, for the effect on mature stages .

Confidor induced the highest initial and residual activity giving 81.8 and 80.6% and 71.5 and 67.5% respectively. El-Dewy (2006) mentioned that imidacloprid (Confidor) proved to be one of the superior compounds against the whitefly (adult and immature stages). Zidan et el. (2008) found that CAPL2 was effective against adult of *B.tabaci* recording 65.64% reduction after48h. and 76.85% reduction at 15 days after treatment.

II The side effect of the tested compounds on some predators associated with *Aphis gossypii* and *Bemisia tabaci* infesting cotton plants during 2007 and 2008 cotton seasons.

Data presented in Table (4) elucidate the side effect of the tested compounds on natural enemies when sprayed on cotton plants for controlling aphid and whitefly (mature and immature stages) during 2007 and 2008 cotton seasons. These predators are *Chrysopa sp., paederus alefierli*, orius spp., *scymnus* spp. and *true spider*. In season 2007, data indicated that, thiamethoxam + lambdacyhalothrin exhibited the highest initial and residual effect recording 59.9 and 35.01% reduction, respectively. Diafenthiuron, buprofezin, KZ –oil and imidaclopred came in the second order where their initial activities were: 56.5, 50.0, 37.5 and 30.8%, respectively, and their residual activitiy were 35.01, 33.4, 32.5 and 20.8%, respectively. In 2008 season, also, thiamethoxam + lambdacyhalothrin was the highest effective compound having the initial value of 54.3% followed by KZ – oil 46.03, diafenthiuron 38.1%, buprofezin 33.9% and imidacloprid 23.8% respectively, while the mean residual effect was 57.9, 56.3, 50.4, 42.1 and 37.1%, respectively for buprofezin, diafenthiuron , KZ – oil, thiamethoxam + lambdacyhalothrin and imidacloprid, respectively.

The obtained results are in agreement with many invistigators who evaluated the efficiency of the tested compounds on commonly predators in cotton field, kandil etal. (1991) mentioned that diafenthiuron and imidacloprid were the least effective against predators.

Moreover, Sharaf *et al.* (2003) showed that all tested compound (diafenthiuron, buprofezin, imidacloprid and triazophos) had no effect on all tested enemies (true spiders, *Coccinella undecimpunctata, chrysoperla carnea* and *paederus alfierii).* Mangoud *et al.* (2004) reported that super Misrona oil was less toxic against the predators. El-Zahi (2005) found that. KZ – oil was the most harmless against predatos, while diafenthiuron was harmful during 14 days post application El-Dewy (2006) reported that imidacloprid and diafenthiuron were moderate toxic against nature enemas.

Finally, it can be concluded that imidacloprid was the most effective against aphids in cotton fields followed by buprofezin and diafenthiuron while KZ – oil had a moderate effect. Also, imidacloprid induced a high effect on whitefly (mature and immature stages) followed by KZ – oil and thiamethoxam + lambdacyhalothrin. On the other hand thiamethoxam + lambdacyhalothrin, diafenthiuron, buprofizin and KZ – oil gave moderate effect on the natural enemies while imidacloprid gave weak effect.

Table (1): Effect of various pesticides against Aphid, *Aphis gossypii* during 2007 and 2008 cotton season

Season	Treatments	Rate / fed	No. of aphid / 100 leaves						*% reduction					Mean of residual effect	General mean
			Before spray	2 days	5 days	8 days	11 days	14 days	**IE	5 days	8 days	11 days	14 days		
2007	Imidacloprid	500 m/ 100 L	1395	85	15	17	14	40	95.8 d	99.6	99.02	99.4	97.13	98.8 c	98.2
	diafenthiuron	300 ml/ fed	1120	510	400	100	85	90	68.5 b	82.9	91.8	93.6	95.6	90.95 b	86.5
	buprofezin	600 ml/ Fed	995	280	270	100	90	160	80.5 c	86.9	90.8	92.2	91.3	90.3 b	88.3
	KZ – oil	1 L/ 100L	1450	760	820	470	690	1280	63.7 a	71.8	77.5	59.03	52.01	64.4 a	64.6
	Untreated	-	935	1350	1950	1025	1086	1720	-	-	-	-	-	-	-
2008	Imidacloprid	50mL/ 100 L	1530	90	50	40	25	18	96.8 d	98.4	98.8	99.2	99.3	98.9d	98.6
	diafenthiuron	300m/ fed	1200	750	550	440	190	120	66.02 a	77.2	83.6	92.3	94.4	84.9b	82.7
	buprofezin	600ml/ fed	1600	580	560	450	280	190	80.3 b	82.6	87.5	91.5	93.4	88.7c	87.1
	KZ – oil	1L/ 100L	1830	1175	1000	960	1500	1600	65.1 a	72.8	76.6	60.4	51.2	65.30 a	65.2
	untreated		870	1600	1750	1950	1800	1560							

*% reduction with the same letter are not significantly different at 5% level by DMRT
** IE = initial effect

Table 2: Effect of thiamethoxam + lambda-cyhalothrin (Anjio), imidacloprid (Amidor) and KZ-oil against mature stages of whitefly *Bemisia tabaci* during 2007 and 2008 cotton seasons

Season	Treatments	Rate / fed	No. of whitefly mature stages/ 100 leaves after spraying at indicated days						*% reduction					Mean of residual effect	General mean
			Before spray	2 days	5 days	8 days	11 days	14 days	**IE	5 days	8 days	11 days	14 days		
2007	Anjio	80 ml/ fed	514	150	90	120	180	200	73.3 b	82.6	70.1	67.9	62.5	70.8a	71.3
	Amidor	50 ml /100L	721	220	170	120	145	125	72.7 ab	76.5	78.7	81.6	83.3	80.03b	78.6
	KZ-oil	l/100L	738	256	210	200	220	160	68.6 a	71.7	65.3	72.7	79.1	72.2ab	71.5
	Untreated	-	477	523	479	372	520	495	-	-	-	-	-	-	-
2008	Anjio	80ml/fed	222	70	40	80	65	65	76.3 b	85.1	73.4	65.6	59.8	70.9a	72.04
	Amidor	50 ml / 10 L	500	200	160	170	90	55	69.9 a	73.5	74.9	78.9	84.9	78.1b	76.22
	KZ-oil	l/100l	475	195	130	200	100	70	69.1 a	75.6	68.9	75.3	79.7	74.9ab	73.7
	Untreated	-	316	420	382	428	269	230	-	-	-	-	-	-	-

*% reduction with the same letter are not significantly different at 5% level by DMRT
** IE = initial effect

Table 3: Effect of thiamethoxam + lambdacyhalothrin (Anjio), imidacloprid (Amidor)and KZ-oil against immature stages of whitefly, *Bemisia tabaci* during 2007 and 2008 cotton season

Season	Treatments	Rate / fed	No. of whitefly mature stages/ 100 leaves						*% reduction					Mean of residual effect	General mean
			Before spray	2 days	5 days	8 days	11 days	14 days	**IE	5 days	8 days	11 days	14 days		
2007	Anjio	80 ml/ fed	601	210	250	185	90	60	76.2 c	65.9	72.3	77.5	82.03	74.4a	74.8
	Amidor	50 ml /100L	730	300	240	180	120	70	71.9 b	73.1	77.1	75.3	82.7	77.06a	76.02
	KZ-oil	l/100L	630	370	210	220	100	230	59.9 a	72.7	68.6	76.2	81.4	74.7a	71.8
	Untreated	ml	450	660	550	500	300	250	-	-	-	-	-	-	-
2008	Anjio	80ml /fed	730	150	550	500	237	190	86.3 c	59.4	68.4	83.8	86.4	74.3a	76.7
	Amidor	50ml /100L	650	270	290	280	310	250	72.2 b	75.1	72.9	76.3	78.4	75.7a	74.9
	KZ-oil	l/100l	570	300	290	320	270	280	64.8 a	72.6	74.1	76.4	79.3	75.6a	73.4
	Untreated	-	970	1450	1800	2100	1950	1730	-	-	-	-	-	-	-

*% reduction with the same letter are not significantly different at 5% level by DMRT
** IE = Initial effect

Table (4): Side effect of imidacloprid (Amidor), thiamethoxam + lambdacyhalothrin (Anjio) , diafenthiuron (Polo)buprofezin (abblaud) and KZ- Oil against natural enemies / 100 cotton plants during 2007 and 2008 cotton seasons

Season	Treatments	Rate / fed	Mean No. of natural enemies / 100 plants						*% reduction					Mean of residual effect	General mean
			Before spray	2 days	5 days	8 days	11 days	14 days	**IE	5 days	8 days	11 days	14 days		
2007	*Amidor*	50ml/100L	13	9	8	11	9	13	30.8 a	38.5	15.4	30.8	0.00	21.2 a	23.1
	Anjio	80ml/ fed	15	9	6	5	8	9	59.9 d	50.0	26.0	39.04	25.0	35.01 b	39.9
	polo	300 gm/ fed	23	10	15	7	11	9	56.5 d	18.5	32.4	31.61	51.1	33.4 b	38.02
	Applaud	600 ml/fed	22	11	11	6	13	11	50.0 c	37.5	39.45	15.5	37.5	32.5 b	35.9
	KZ - oil	1 L /100L	16	10	10	6	7	12	37.5 b	21.9	17.5	37.4	6.25	20.8 a	24.1
	Untreated	-	20	20	16	9	14	16	-	-	-	-	-	-	-
2008	*Amidor*	50ml/100l	13	13	9	10	15	16	23.8 a	64.8	65.8	16.1	1.54	37.1a	34.4
	Anjio	80ml/100l	15	9	14	14	15	14	54.3 e	57.3	58.5	27.3	25.3	42.1 b	50.04
	polo	300 gm/fed	16	13	12	11	11	12	38.1 c	65.7	69.4	49.9	40.0	56.3 d	52.6
	Applaud	600 ml/fed	15	13	11	11	9	11	33.9 b	66.5	67.4	56.4	41.33	57.9 d	53.1
	KZ-oil	l/100l	24	17	20	21	18	20	46.03 d	61.9	61.1	45.4	33.3	50.4 c	49.5
	Untreated	-	16	21	35	36	22	20	-	-	-	-	-	-	-

Where natural enemies: *chrysopa sp.., paederus alfierii, orius spp., scymnus spp.* and true spider
*% reduction with the same letter are not significantly different at 5% level by DMRT
** IE = Initial effect

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فعالية بعض المركبات الكيماوية على المن والذبابة البيضاء التى تصيب نباتات القطن والأعداء الحيوية المصاحبة لهما.

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معهد بحوث وقاية النباتات – مركز البحوث الزراعية – الدقى– الجيزة

تم إجراء هذا البحث بمحطة البحوث الزراعية بسخا خلال موسمى القطن ٢٠٠٧، ٢٠٠٨ لدراسة التأثير الأبادى الفورى والأثر الباقى لاثنين من مثبطات الكيتين هما الداى فنيثيرون (البولو)، بيبروفيزين (الأبلود) ومركب من مشتقات الداينترومينثين (أميدور) والزيت المعدنى كزد على المن وأيضا دراسة التأثير الفورى والأثر الباقى لمركبات أنجيو (مخلوط من ثياميثوكسام + لمداسيهالوثرين) على الأطوار الكاملة وغير كاملة للذبابة البيضاء وكذلك تأثير كل هذه المركبات على الأعداء الحيوية المصاحبة لهما.

أوضحت النتائج أن مركب أيمداكلوبريد (الأميدور) أحدث أعلى نسبة خفض فى كل من الإبادة الفورية والأثر الباقى على المن حيث كان الانخفاض ٩٥,٨%، ٩٨,٨% على التوالى فى الموسم الأول، كان ٩٦,٨%، ٩٨,٩% على التوالى فى الموسم الثانى وجاء مركب بيروفيزين (الأبلود) فى المرتبة الثانية حيث سجل نسبة خفض ٨٠,٥%، ٩٠,٣% فى الموسم الأول ٨٠,٣%، ٨٨,٧% فى الموسم الثانى. بينما كانت الإبادة الفورية والأثر الباقى لمركبات داى فينثيرون (البولو) ٦٨,٥%، ٩٠,٩% انخفاض فى الموسم الأول، ٦٦,٠٢%، ٨٤,٩% انخفاض فى الموسم الثانى.

أحدث الزيت المعدنى كزد تأثير فورى ومتبقى متوسط حيث أظهر نسبة خفض ٦٣,٧%، ٦٤,٦%، ٦٥,١%، ٦٥,٥% على التوالى فى الموسمين وأوضحت النتائج بالنسبة لتأثير مركبات ثياميثوكسام + لمداسيهالوثرين (الأنجيو)، أيمداكلوبريد (الأميدور) وزيت كزد ضد الطور الكامل للذبابة البيضاء أن مركب ثياميثوكسام + لمداسيهالوثرين (أنجيو) أحدث أعلى نسبة خفض فى حالة الإبادة الفورية حيث كان الانخفاض ٧٣,٣%، ٧٦,٣% على التوالى فى الموسمين يليه مركب أيمداكلوبريد (الأميدور) حيث أعطى نسبة خفض ٧٢,٧%، ٦٩,٩% على التوالى ثم زيت كزد أعطى نسبة خفض ٦٨,٥%، ٦٩,١% على التوالى فى الموسمين بينما أحدث مركب أيمداكلوبريد (الأميدور) أعلى تأثير متبقى حيث كان الانخفاض ٨٠,٧%، ٧٨,١% فى الموسمين يليه زيت كزد أحدث نسبة خفض ٧٢,٢%، ٧٤,٩% على التوالى ثم ثياميثوكسام + لمداسيهالوثرين (الأنجيو) أعطى نسبة خفض ٧٠,٨%، ٧٠,٩ على التوالى فى الموسمين.

بالنسبة للأطوار الغير كاملة للحشرة فإن مركب ثياميثوكسام + لمداسيهالوثرين أحدث أعلى تأثير فورى فى الموسمين أعطى نسبة خفض ٧٦,٢%، ٨٦,٣% على التوالى يليه مركبى أيمداكلوبريد وزيت كزد أعطيا خفض ٧١,٩%، ٥٩,٩% فى الموسم الأول، ٧٢,٢%، ٦٤,٨% فى الموسم الثانى على التوالى على جانب آخر فإن مركب أيمداكلوبريد أحدث أعلى تأثير متبقى فى الموسمين أعطى نسبة خفض ٧٧,٠٦%، ٧٥,٧% على التوالى يليه زيت كزد سجل خفض ٧٤,٧%، ٧٥,٦% على التوالى ثم ثياميثوكسام + لمداسيهالوثرين أعطى نسبة خفض ٧٤,٤%، ٧٤,٣%.

بالنسبة للتأثير الجانبى على الأعداء الحيوية المصاحبة للآفات(أسد المن – الرواعه – الأوريس – الاسكمنس – والعنكبوت المفترس) وجد أن مركب ثياميثوكسام + لمداسيهالوثرين كان أكثر المركبات تأثير فى خفض تعداد المفترسات يليه مركب داى فنثيرون و (بولو) ثم البيروفازين (الأبلود)، ثم زيت كزد. أما مركب أيمداكلوبريد كان تأثيره ضعيف وعليه فإنه يوصى باستخدام أيمداكلوبريد (الأميدور) كمركب أمن على المفترسات فى برامج المكافحة المتكاملة للمن والأطوار المختلفة للذبابة البيضاء.

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