Effectiveness of certain insecticides against on some sucking insect on cotton plant in the 2019 season

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ABSTRACT: Field experiments were carried out to evaluate the efficacy of several compounds against Aphid *Aphis gosypii* infesting cotton plant during 2019. Field experiments were performed to compare are efficiency of three different insecticides against *Aphis gosypii*. The tested insecticides namely Actellic, Actara and Best. The percent of reduction was 98.56, 98.66 and 98.98 % respectively. Field evaluation of certain insecticides against white fly on cotton plant in 2019 season in etayelbarod Field experiments were performed to compare the efficiency of three different insecticides against *Bimici tabaci* these compound were tested against *B. tabaci* were Confidor, Best and Actellic rate of application were 75gm/l, 20gm/l and 625cm/l. mean of reduction was 80.89, 70.58 and 71.35 respectively for Confidor, best and Actellic

Keywords: flonicamid, pyriproxyfen, buprofezin, cotton aphid white fly, adverse effects

1.INTRODUCTION

Cotton aphid, *Aphis gossypii* (Glover) (Homoptera: Aphididae), is an important polyphagous pest on cotton, many of the field crops and vegetables worldwide **(Konar *et al*., 2013; Ahmad *et al*., 2016)**. It causes serious damage and threat to cotton plants through sucking phloem sap, causing crinkled, wilted leaves and hindering plant growth, beside honeydew production and virus transmission. The excretion of honeydew causes a condition known as "sticky cotton", reduce yield and quality of cotton fibers, and cause problems during fiber processing and spin manufacturing **(Denguine *et al*., 2000)**. In addition, honeydew acts as a medium for the sooty mold fungus growth that diminishes the photosynthetic activity and thus plants lose their vigor and growth be-comes stunted. The whitefly, *Bemicia tabaci* (Gennadius) is one of the most intractable and worldwide damaging and injurious top hundred pest attacking a wide range of important crops, vegetables and or mammalians all over the world **(Perring, 2001; Touhidul and Shunxiang, 2007; Abdel –Baky and Al- Deghairi. 2008)**. Since late 1980's the insect has risen from relative obscurity to become one of the primary insect pest of agricultural crops **(Lin *et.,al* 2007)** Abdel –Baky and Al- Deghairi. 2008) and that may due to not only its direct damage by sucking plant phloem sap but also its transition of various viral diseases **(Oliveira *et., al*., 2001; Al- Deghairi. 2009)**. However, management of *B. tabaci* changing because its intercrop movement, high reproductive potential and it's under leaf habitat **(Gering *et al*., 2001; Al-Deghairi, 2009; Fouly *et, al*., 2011)**. As cotton plants are treated usually with conventional insecticides generally. Sucking – piercing insect resistance too.

The aim of this study studied of effective of certain insecticides studied of percent reduction of these insecticides against cotton aphids and white fly

2.MATERIALS AND METHOD

2.1. Tested Insecticides: 2.2. Tested Insects:

2.2.1. Aphis:

Field experiments were carried out to evaluate the efficacy of several compounds against Aphid *Aphis gosypii* infesting cotton plant during 2019 started when the infestation reached about 10

Table (1) Tested Insecticides.

Bio-insecticides			
No	**Common name**	**Formulation**	**Trade name-conc**
1	**Pirimiphos-methyl**	WP	Actellic
2	**Thiomethoxam**	WP	Actara
3	**Imidaclpride**	WP	Best
4	**Imidaclpride**	WG	Confidor

cotton growing season at Etayelbarod The experimental area was divided according to the complete randomized block design including four replicates for each treatment and each replicate was 6x7 m (1/100 fed.). Kanapack CP-3was used in applying the compounds as foliar treatment diluted with water at the rate of 400 liter/fed. The applications insect/leaf and checkup the number of aphids before spray and after spray (2, 5 8, 11and 14) days.

2.2.2. White fly:

Field experiments were carried out to evaluate the efficacy of several compounds against white fly *Bemicia tabaci* infesting in cotton plant during 2019.

Check up the sample 30 leaves per replicates and collected from upper plants before sparing also collected after 2,5 and 15 days after sparing and use four replicates in experiment. The insecticides were applied in August 2019 season. The percent reduction in infestation was calculated according to Henderson and Tilton (1952).

$$\text{Reduction in infestation} = 100 \text{ X } \frac{(1\text{- Ta x cb})}{\text{Tb x ca}}$$

Where:

Tb= the number of insects recorded before treatment

Ta= the number of insects recorded after treatment

Ca= the number of insects recorded from the check control after treatment.

Cb = the number of insects recorded from the check control before treatment.

The following insecticides used Actellic, Actara, Best

3.Results and Discussion

Field experiments were carried out to evaluate the efficacy of several compounds against Aphid, *Aphis gosypii* infesting cotton plant during 2019. Field experiments were performed to compare are efficiency of three different insecticides against *Aphis gosypii*. The tested insecticides were actellic, actara and best. Data in Table (3) show the mean number of alive aphid per leaf before and after spraying. Treatments were applied when the number of aphids ranged between 1975 to 1616/leaf with an average 9.6/ leaf before treatment. The efficacy of tested insecticides against aphids in field was estimated 2, 5, 8, 11 and 14 days of spraying. Data indicated that there were differences between the control and the tested treatment and also differences occurred between the different insecticides. The number of aphids per leaf decreased from 1865, 1617, 1975 and 1890 before spraying for actellic, actara, Best and control and 4,3,5 and 1530 after 2 days and 0,0,0 and 815 for 5 days and after 8 days also (0,0 and 0) actellic, actara, best but in 11 days' number of aphid's increase (8,9 and 2) for insecticides respectively, finally in 14 days (17,15 and 14) in actellic, actara, best respectively but in control 335 aphids.

Table (2): Reduction in infestation after spraying with certain insecticides against cotton aphids.

Compounds	Rate	Before spray	After spray				
			2 days	5 days	8 days	11 days	14 days
Actellic	**300 cm/f**	1865	4	0	0	8	17
Actara	**20 gm/100L water**	1617	3	0	0	9	15
Best	**25 gm/100L water**	1975	5	0	0	2	14
Control		1890	1530	1160	815	450	335

Data in table (4) indicate the percentage reduction in infestation of *A. gossypii* after spraying with tested insecticides. Data show that most of the tested insecticides induced high reduction in infestation with aphids through the evaluation period. The results indicate that tow day after spray (99.7, 99.8 and 99.6) for Actellic, Actara, Best respectively in 5 day and 8 day percent reduction was 100 % also in 11 day and 14 percent reduction was (98.2, 98 and 99.5) % and in 14 day was (94.9, 95.5 and 95.8) in Actellic, Actara, best respectively finally the mean percent reduction was 98.56, 98.66 and 98.98 % percent reduction.

Table (3): Percent reduction in infestation of *Aphis craccivora* after spraying with certain insecticides.

Compounds	rate	% of reduction					Percent of reduction
		2 days	5 days	8 days	11 days	14 days	
Actellic	**300 cm/f**	99.7	100	100	98.2	94.9	98.56 %
Actara	**20 gm/100L water**	99.8	100	100	98	95.5	98.66 %
Best	**25 gm/100 L water**	99.6	100	100	99.5	95.8	98.98 %

Sahar E. Eldesouky (2019) tested the efficacy of flonicamid, pyriproxyfen and buprofezin against the field strain of cotton aphid, *Aphis gossypii* adults under laboratory and field conditions. The joint toxic action of flonicamid with pyriproxyfen or buprofezin was also evaluated. The adverse effects of these insecticides on two natural enemies, *Coccinellaundecimpuctata* (Linnaeus) (Coleoptera: Coccinellidae) and *Chrysoperlacarnea* (Stephens) (Neuroptera: Crysopidae) were also assessed in the field during 2017 and 2018 cotton seasons. Under laboratory conditions, flonicamid was the most toxic followed by pyriproxyfen and buprofezin with LC_{50} values 0.58, 3.42 and 4.26 mg L-1, respectively. Potentiating effect was obtained when flonicamid at LC_{25} was mixed with pyriproxyfen or buprofezin each at LC_{25} and LC_{10} with co-toxicity factors ranged from 23.08 to 37.52. Mixtures of flonicamid at LC_{10} with pyriproxyfen or

buprofezin at LC_{25} gave an additive effect with co-toxicity factors 18.16 and 10.02, respectively. The highest mean reduction percentages of *A. gossypii* were achieved by flonicamid/ pyriproxyfen mixture (90.45 and 87.15%) followed by flonicamid/buprofezin mixture (87.47 and 81.34%) and flonicamid (84.31 and 77.89%) in both seasons 2017 and 2018, respectively. All insecticide treatments were classified as harmless or slightly harmful on *C. undecimpuctata*and *C. carnea*in the two seasons. Finally, the obtained results indicated that flonicamid and its binary mixtures with pyriproxyfen or buprofezin could be considered as promising candidates for the management of *A. gossypii* because of their higher efficacy and lower toxicity on associated natural enemies.

Table (4): Reduction in infestation after spraying with certain insecticides against white fly

Compounds	Rate/100 Liter water	Before spray	After spray			
			2 days	5 days	10 days	15 days
Confidor	**75 gm**	807	113	227	215	310
Best	**20 gm**	781	206	293	194	601
Actellic	**625 cm**	805	304	186	183	592
control		809	1107	1434	954	1043

Field evaluation of certain insecticides against white fly on cotton plant in 2019 season in etayelbarod.

Field experiments were performed to compare the efficiency of three different insecticides against *Bimicia tabaci* these compounds were tested against *B. tabaci* were confidor, Best and Actellic rate of application were 75gm/l, 20gm/l and 625cm/l.

Table (5) show the mean number of alive white fly per leaf before and after spraying. Treatments were applied when number of whitefly ranged between 781 to 809/ leaf. The efficacy of tested insecticides against white fly in field was estimated after 2,5,10 and 15 days of spraying. Results indicated that there were differences between the control and the tested treatments and also differences occurred between the different insecticides. The number of whitefly decreased from 807, 781, 805 and 809 for confidor, best, actellic and control respectively before spraying but after spraying was (113,206.304 and 1107 leaf). For insecticides respectively after 2 days from spraying also after 5 and 10 days number of whitefly decreased comparing with control finally after 15 days number of whitefly increase but not the same of control.

Data in table (5) showed percent of reduction in infestation after 2,5,10 and 15 days

After two days percent reduction was (89.7, 81.0 and 72.9 for Confidor, Best and Actelic, after 5 days percent reduction was recorded which is one day before application and 1, 3, 14 days after application

Table (5): Percent reduction in infestation of white fly after spraying with certain insecticides

Compounds	Rate/100 Liter water	% of reduction				Mean of reduction
		2 days	5 days	10 days	15 days	
Confidor	75 gm	89.7	85	78.15	70.74	80.89%
Best	20 gm	81.0	80.0	79.84	41.48	70.58%
Actellic	625 cm	72.9	87.2	81.52	43.79	71.35%

(85.0, 80.0 and 87.2) for Confidor, Best and Actellic after 10 and 15 percent reduction was 78.15, 79.84 and 81.52 and 70, 41.48 and 43.79 respectively for confidor, best and actelic finally mean of reduction was 80.89, 70.58 and 71.35 respectively Confidor, Best and Actellic

MohdRasdiZaini (2017) carried out a field study for two cropping periods in the first season in year 2014 and the second season in 2015. A study was carried out to examine the efficacy of selected insecticides against whitefly (*Bemisia tabaci*) on baronial crops and the effect on natural enemies (Spider) under field conditions. Five treatments with four replications were applied. The treatments were T0= Control (water), T1= Imidacloprid (Confidor), T2= Acetamiprid (Mospilan), T3= Dinotefuran (Oshin) and T4= Cyantraniliprole (Benevia). Pre-treatment and post-treatment observation were 7 and of insecticides. A total of two applications of treatments were done. The results revealed that Imidacloprid was recorded as the most effective and the highest reduction of whiteflies during the first season with 96.73%, followed by Acetamiprid (92.44%), Cyantraniliprole (82.65%) and Dinotefuran (80.74%) while during the second season, Imidacloprid also was recorded as the highest reduction with 79.99%, followed by Acetamiprid (76.34%), Cyantraniliprole (54.09%) and Dinotefuran (36.87%). Overall, chemical control of Imidacloprid was the most effective against whiteflies populations in baronial particularly in the first season as compared to second season. The effect of these selected insecticides on natural enemies (Spider) revealed that chemical control of Imidacloprid gave the highest reduction of spider with 65.69%), followed by

Cyantraniliprole (64.47%), Acetamiprid (41.44%) and Dinotefuran (15.45%). Imidacloprid and Cyantraniliprole were classified as moderately harmful to spider while Acetamiprid and Dinotefuran were classified as harmless or slightly harmful.

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فعالية بعض المبيدات الحشرية ضد بعض الحشرات الماصة في نبات القطن في موسم ٢٠١٩

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الملخص العربي:

تم إجراء تجارب ميدانية لتقييم فعالية العديد من المركبات ضد من القطن Aphid *Aphis gosypii* خلال عام ٢٠١٩. تم إجراء التجارب الميدانية لمقارنة كفاءة ثلاث مبيدات حشرية مختلفة ضد *Aphis gosypii*. المبيدات الحشرية المختبرة Actellic و Actara و Best. وكان النسبة في الأنخفاض ٩٨,٥٦ و ٩٨,٦٦ و ٩٨,٩٨٪. تم التقييم الميداني لبعض المبيدات الحشرية ضد الذبابة البيضاء على نبات القطن في موسم ٢٠١٩ في ايتاي البارود تم إجراء التجارب الميدانية لمقارنة كفاءة ثلاثة مبيدات حشرية مختلفة ضد الذبابة البيضاء *Bemicia tabaci* تم اختبار هذه المركبات ضد *b. tabaci*، وكان مبيد Confidor ، أفضل ويليه البيست واخيرا Actellic. وكان معدل التطبيق للثلاثة مبيدات هو ٧٥ جم / لتر ، ٢٠ جم / لتر و ٦٢٥ سم / لتر وكان نسبة الخفض ٨٠,٨٩ و ٧٠,٥٨ و ٧١,٣٥ % على التوالي لكلا من الكونفيدور, بيست واخيرا الاكتلك.