Evaluation the efficiency of spinetoram 12SC against dubas bug on the date palm *Ommatissus* binotatus lybicus (Homoptera : tropiduchidae)

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ABSTRACT

Dubas bug *Ommatissus* binotatus lybicus was spread in the most date palm orchards but the infection severity was different from region to another depending on the services operation, closeness or faraway the river and little or dense tree . The highly infection caused weakness and deterioration the date palm and another fruit trees which were planting under date palm because of honeydew and collection of dust and growth of rot fungi, then led the leaf became dry and dead in Iraq . Chemical control still use against Dubas bug . inorder to select active insecticides and safety or less injury to the environment, this study aimed to evaluate new insecticides (spinetoram 12SC) against Dubas bug . The result showed decline in the numbers of this insect, which reached 0.60,0.93,0.73 and 0.46 insect/leaflet after 10 day of spraying for spinetoram (0.50, 0.75 and 1.0 ml/L) and Bifenthrin (2.0 ml/ L) respectively comparing with 9.6 insect/ leaflet in control treatment (water only). Also the insecticides showed high efficiency of killing, was reached 90.7, 86.9, 88.7 and 89.5 % for spinetoram (0.50, 0.75 and 1.0 ml / L) and Bifenthrin (2.0 ml / L) respectively. The field study revealed that spinetoram had low effect on predators of coccinellidae compare with high effect of Binfenthrin. Belong above results, we can use spinetoram with concentrate 0.50 ml /L because it gave the same efficiency when compare with other concentrates, it was useful to reduce using cost in addition to represent new chemical group which useful to prevent this insect from induced resistance against the action of pesticides beside to the low effect on coccinellidae predators, it was useful to use spinetoram with in IPM programme against Dubas bug.

Key word: spinetoram, *Ommatissus binotatus*.

INTRODUCTION

The date palm *Pheonix dactlifera* had economic important for human life since the seniority and yet. Iraq was the date palm habitats since the seniority in the world(2),had more than 600 variety, almost date palm orchards was falling in small area between 0.25 -2.50 ha.it was accomplished 90% of total area which planting with date palm, but the continuous negligent & little care of palm trees in addition to its infection by many pests led to deteriorate the date palm orchards in Iraq, therefor the no. of date palm trees was reduced from 32 million in 1960 to 16.3 million in 1989 (7). The date palm trees was infected by many pests which caused great injuries, estimated by more than 100 million dollar every year but the no. of pests which attacked date palm trees estimated by 280 species of insects & non insects which attacked date palm in different countries of the world(1). one of them dubas bug *Ommatissus binotatus* which was one of the important

insect, its injuries induced by the nymph & adults which was sucking the plant sap from leaflet & fruits during spring & autumn generation, this led to weakness of infected trees or be died if infection lasted many years without control, also the plants which was planting under date palm was affected by honey dew which secreted by dubas bug, the honey dew led to collect the dust & encourage the growth of fungi on the leaflet & fruits which reduce the bioactivity of date palm trees (6).the dubas bug was spreading in date palm planting regions but the infection severity was different from region to anther region which limited by the level of services operations and nearby or far away from rivers or when the date palm orchards were few or high density of the trees in addition to control measurements or whit out control (6). The first control conducted against this pest, was in 1974 at the Abu-Khaseb-Basrah, then used many insecticides against it (3,4,6,8,9,10&11),the chemical control still use in Iraq against this pest and control measurement used against spring generation only but didn't use against Autumn generation to avoid the residues of insecticides on ripen date fruit & protected the consumers from its injuries (6) .the amount of different insecticides which using against this pest estimated by 400-500 ton/year (9). While The chemical control still use in Iraq, there for must be search about new effective insecticides and safety instead of traditional insecticide which used yearly by state board of plant protection, there for this study aimed to evaluate spineforam 12SC which belong to new chemical group with in IPM program .

MATERIAL & METHOD

This study was conducted in the one orchards of date palm at the Al-awarah region-Al-hussainia /Karbala, south of Baghdad –Iraq.it was selected no. of date palm trees at the same ageing &variety (zahdi), the treatment was distributed on these trees which represented by the insecticides, spinetoram 12 sc with concentrate 0.50, 0.75 and 1.0 ml/ L . in addition to control treatment(water only), (3) replicate for every treatment, using RCD design. The spraying operation conducted during the end third week of May by using spraying system, capacity 100 L, manufacture in Turkey, sampling was taking randomly by cutting (5) leaflet /frond and put it in the plastic sac(black color), 15leaflet / treatment. The no. of insect was calculated in the leaflet & in the sac. the result was analyzed statically, the percentage efficacy was calculated by using Henderson & Tilton equation (17). The following description of using pesticides:

1. Spinetoram (Radiiant SC 12 %) – it was new generation of pesticides belong to Spinosyns group .produced by aerobic fermentation for soil bacteria *Saccharopolyspoea spinosa* (Actinomycetes).the spinetoram was mixing of spinosys A(C41H65NO10) and spinosys D (C42H67NO10),LD50 was 5000 mg / kg (orally & dermal for rats) and its chemical structure was 3- ethoxy -5,6-dihydro spinosyn J and the effective material was spinosyn, this insecticides recorded by EPA agency &clacified with in fifth group according to WHO calcification(14, 18).
2. Bifenthrin- it was pythriod compound .LD50 375 mg / kg (orally for rats) . its chemical structure was 2-metyl(1,1- diphenyl) -3-YL} methyl -3 –(2-chloro-3,3,3- triflouro-1- propenyl) -2,2-di- methyl cyclopropane carboxylate.it was recorded in Iraq against dubas bug, was calcified with in second group according to EPA &WHO clacification(12).

RESULTS & DISCUSSION

The study results revealed that the population density of dubas bug was decline after (3) days of spraying operation and go on in reducing, was reached 0.60, 0.93, 0.73 & 0.73 insect / leaflet after (10) days of spraying for insecticides spinetoram with concentrate 0.50,0.75 &1.0 ml/ L and bifnthrin with concentrate 2.0 ml/ L respectively compare with 9.0 insect/ leaflet in control treatment (water only) table (1). The statically analysis revealed significant different between control treatment and using insecticides in this study but the results did not revealed significant different between spinetoram by three concentrates and bifenthrin after (10) days of spraying table (1). Table (2) showed the high percentage efficacy of using pesticides against dubas bug after (10) days of spraying, was reached 90.7, 86.9,88.7 & 89.5% for spinetoram with concentrate 0.50, 0.75 &1.0 ml/ L and bifenthrin with concentrate2.0ml/ L respectively.

The field observation showed that spinetoram had low effect on the predators belong to coccinellidae which was spreading in Iraqi environmental, especially the concentrate 0.50 ml/ .L compare with high effect for bifenthrin. (5) found that spinetoram was high effect against *Aphis fabae* but low effect on the *Conccinella undicmpunctata*, the percentage of killing was less than 50% after (10) days from spraying and the predator female can lay eggs.also (15) found that spinetoram was high effective against the larvaeof *Pectinophora gossypiella* while (16)confirmed that spinetoram had low effect on the predators in the cotton field when it used concentrates . according to recommendation

CONCLUSION

Belong to above results, we can use spinetoram with concentrate 0.50 ml / L. because it gave the same efficacy for another concentrates in addition to reducing the control cost and represented new chemical group beside to low effect on predators .the using new insecticides from different chemical groups was very important to avoid the resistance which induced by dubas bug against insecticides .we suggested to conduct additional studies about the effective

of spinetoram on the the predaors which was found in the date palm orchards in order to use it whit in IPM program.

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Tables

Table (1): The average no. of date palm dubas bug *O. binotatus lybicus* before and after spraying by 3,7& 10 days.

Treatments	Average no. of insect before spraying	Average no. of insect after spraying by days		
		3	7	10
Spinetoram 12SC 0.50 ml/L	19.86	7.8	3.3	0.60
Spinetoram 12SC 0.75 ml/L	21.83	6.46	2.3	0.93
Spinetoram 12SC 1.0 ml/L	20.46	12.7	3.5	0.73
Bifenthrin (2 ml/L)	13.46	1.93	0.73	0.46
Control(water only)	29.6	12.7	9.0	9.6
LCD at 0.05	13.9	5.34	2.09	2.0

Table (2) – the percentage efficacy of spinetoram 12 sc against date palm dubas bug *O.binotatus lybicus* by using Henderson & Tilton equation .

Treatments	% efficacy by days		
	3	7	10
Spinetoram 12SC 0.50 ml/L	8.5	45.4	90.7
Spinetoram 12SC 0.75 ml/L	31.3	65.5	86.9
Spinetoram 12SC 1.0 ml/L	-35(0.0)	47.50	88.7
Bifenthrin (2 ml/L)	66.6	82.1	89.5