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Effectiveness of Talstar and Decis insecticides against dubas bug, *Ommatissus binotatus* f. sp. *lybicus* (Homoptera: Tropiduchidae) at Diyala Governorate, Iraq

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Abstract

The present study was conducted in Diyala Governorate, Baqubah district of Iraq on date palms during May 2011. The main objective of the study was to evaluate the effect of insecticides Talstar (Bifenthrin) and Decis (Deltamethrin) against dubas bug (*Ommatissus binotatus* f. sp. *lybicus*), the insecticides used and data was recorded before 1 day and after 1, 3 , 7, 14, 28 and 35days of spraying application. Results indicated that reduction in population of dubas bug after spraying of insecticides Talstar (Bifenthrin) and Decis (deltamethrin) which recorded (12.8, 3.5, 2, 1.3, 0.5, 0.3, and 0.1) and (18.0, 8.3, 3.0, 1.6, 1.0, 1.0, 1.0) after 1, 3, 7, 14, 28 and 35 days respectively. Talstar (Bifenthrin) and Decis (deltamethrin) were most effective insecticide against dubas bug insects and gradually increased in Corrected efficacy percentage which reached (72.3, 76.7, 87.7, 95.2, 97.1 and 98.5%) and (53.0, 81.2, 88.7, 93.2, 93.2 and 93.2%) after 1,3,7,14,28 and 35 days respectively.

Keywords: Dubas bug, Talstar (Bifenthrin), Decis (Deltamethrin), Iraq.

Introduction

The date palm *Phoenix dactylifera* is a very important plant throughout the world and Iraq. It has high economic importance due to its food value and high natural tolerance to hard conditions including salinity, drought and high temperatures (Mousavi *et al.,* 2009; Bakheet *et al.,* 2008). Dubas bug was called from the honeydew through Arabic word, *dibis* (Hussain, 1963). It was first noted as a pest of date palm in Basra province of Iraq between 1919-1920 (Ramachandra, 1922). This pest is now distributed among several countries in the near East and North Africa (Hussein and Ali, 1996; El-Haidari and Al-Hafidh, 1986; El-Haidari, 1982; Waller and Bridge, 1978; Hussain, 1974; Gharib, 1966; Dowson, 1936; Alfieri, 1933, 1934). Dubas bug has two generations in a year (spring and autumn) and it completes whole life cycle on fronds (Esmaili, 1983; Askari and Bagheri, 2005; Capinera, 2008; Sepanji *et al*., 2010). The adults and nymphs can damage the date palms by thrusting their beak to the phloem of the leaves and decreasing the productivity of the palms and it is excrete honeydew on surface of leaves that become sticky and it is causes attract the dust, dry leaflets, rot fungi and decrease the photosynthetic rate (Gharib, 1967). Pyrethroids are synthetic analogues of pyrethrins, insecticidal substances obtained from the flowers of a species of chrysanthemum (*Chrysanthemum cinerariaefolium*). The valuable insecticidal properties of pyrethrum (a mixture of pyrethrins, cinerins, and jasmolins) were recognized in the 19th century and their properties stimulated detailed examination of the chemical constitution of the active esters in the first quarter of the 20th century (Ecobichon, 1996). Pyrethroids and pyrethrins affect nerve impulse transmission in insects mainly through their action on voltage-sensitive sodium channels (Soderlund and Bloomquist, 1989). Bifenthrin is a pyrethroid compound which has been synthesized for the control of a wide range of foliar insect pests, termites, and wood-infecting insects (Dong *et al*., 1991). Deltamethrin is considerably less harmful to the environment and most non-target organisms than other insecticides (Adelsbach and Tjeerdema, 2003). Present study was conducted to compare efficacy of different insecticides against the pest.

Materials and Methods

Experiment was undertaken in the middle of Iraq in Diyala governorate, Baqubah district on date palms, cultivar zahdi to evaluate the efficacy of insecticides Talstar (Bifenthrin) and Decis (deltamethrin) against dubas bug during May of 2011. Three treatments with three replications in a

randomized block design and the data was analyzed by Analysis of Variance (ANOVA) (Fisher and Yates, 1968), each treatment includes three trees .Before spraying of trees with insecticides and other trees with water only as control, 10 leaflets from two fronds were randomly collected from each tree and the number of nymphs or adult insects on the leaflet was counted. All the trees were sprayed after the application of treatments. The samples of 10 leaflets from each tree were also collected after one, three, seven, fourteen, twenty eight and thirty five days of treatments application. The percentage of efficacy was calculated by Henderson-Tilton's formula (Henderson and Tilton, 1955).

$$\text{Corrected \%} = \left(1 - \frac{n \text{ in Co before treatment} * n \text{ in T after treatment}}{n \text{ in Co after treatment} * n \text{ in T before treatment}}\right) * 100$$

Where: n = Insect population, T = treated, Co = control

Results and Discussion

Analysis of variance revealed that no significant differences in numbers of nymphs before spraying among all the treatments, Talstar (Bifenthrin) and Decis (Deltamethrin) were showed significantly increased in reduction of dubas bug population after spraying which recorded (12.8, 3.5, 2, 1.3, 0.5, 0.3, and 0.1) and (18.0, 8.3, 3.0, 1.6, 1.0, 1.0, 1.0) as compared with control (14.5, 14.1, 12.5, 12.1, 12.1, and 12.1) after 1,3,7,14,28 and 35 days respectively , there are no significant difference between Talstar (Bifenthrin) and Decis (Deltamethrin) (Table 1). The statically analysis revealed significant differences in corrected efficacy percentage of nymphs and adults after 1 day of spraying between insecticides Talstar (Bifenthrin) and Decis (Deltamethrin) which recorded (72.3and 53.0%) respectively but the results did not revealed significant differences between insecticides after 3, 7, 14, 28 and 35 days of spraying. The insecticides were found toxic to nymphs and adults of dubas bug as compared to control after different intervals of spraying. These results are similar to (Razzaq *et al*., 2010) who reported that bifenthrin was the most effective insecticide against of mustard aphid after application of insecticide. Amin *et al*., 2014 reported that bifenthrin was recorded highest percent reduction of population in the leaf miner *Phytomyza horticola* on Canola *Brassica napus* after spraying Sia *et al.* (1989) was reported that deltamethrin @ 1% was safe and effective against insect damage .Singh *et al.* (1998) Deltamethrin was most effective in protecting the wheat seeds up to nine months against *Sitophilus oryzae* .

Conclusions

Results from the present study revealed that Talstar (Bifenthrin) and Decis (Deltamethrin) were very effective insecticides and gave good control on Dubas bug insects after 1,3,7,14,28 and 35 days of spraying. Therefore, Talstar and Decis can be used for the effective management of Dubas bug insects.

Table (1): Numbers of dubas bug *Ommatissus binotatus lybicus* before and after spraying by days

Trade Name	Chemical Name	Chemical Group	Numbers of nymphs before spraying	Numbers of nymphs after spraying					Average of adults numbers after spraying
				Days					
				1	3	7	14	28	35
Talstar	Bifenthrin	Pyrethroid	12.8	3.5	2.5	1.3	0.5	0.3	0.1
Decis	Deltamethrin	Pyrethroid	18.0	8.3	3.0	1.6	1.0	1.0	1.0
Control (water only)			14.5	14.1	12.5	12.1	12.1	12.1	12.1
CD 0.05			N.S	4.9	3.9	2.5	2.8	2.9	2.8

Table (2): Corrected efficacy percentage of treatments against dubas bug *Ommatissus binotatus lybicus* by using Henderson and Tilton equation.

Treatments	Corrected efficacy percentage of nymphs after spraying					Corrected efficacy percentage of adults after spraying
	Days					
	1	3	7	14	28	35
Talstar (Bifenthrin) 60 ml/30 L water	72.3	76.7	87.7	95.2	97.1	98.5
Decis (deltamethrin) 37.5 ml/30L water	53.0	81.2	88.7	93.2	93.2	93.2
CD 0.05	9.709	N.S	N.S	N.S	N.S	N.S

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