

**EFFECT OF TWO NEEMAZAL FORMULATIONS ON
THE COWPEA APHID, *APHIS CRACCIVORA* KOCH.
INFESTING BROAD BEAN PLANTS AT
EL-KHATTARA, SHARKIA
GOVERNORATE**

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ABSTRACT: The effects of NeemAzal formulations; NeemAzal-T/S^(*) (1%Azadirachtin) and NeemAzal-T* (5% Azadirachtin) on the cowpea aphid, *Aphis craccivora* Koch. were studied on broad bean plants in Sharkia Governorate, during 1997/1998 and 1998/1999 growing seasons. The higher concentrations of the two tested NeemAzal formulations reduced slightly the mean numbers of *A. craccivora* and seemed to be significantly effective for its control. The residual action of NeemAzal-T/S and NeemAzal-T may protect broad bean plants from aphid infestation for about 10 and 5 days, respectively. Generally, the double spraying were more effective than the single one of NeemAzal formulation. Also, NeemAzal-T/S induced more reduction in mean numbers of aphids than NeemAzal-T.

Broad bean yield showed significant differences for plots treated by both NeemAzal formulations and concentrations. Yield in NeemAzal-T/S was proportionally more than that in NeemAzal-T, which was more than that of the untreated check. Plants that were sprayed twice with the highest concentration of NeemAzal-T/S produced the highest yield.

INTRODUCTION

Because aphids have become resistant to most conventional insecticides, frequent and excessive insecticide applications are needed

for its control Dimetry and El-Howary (1995). This can lead to problems of toxic residues and pollution of the environment. This situation dictates the need for safe,

(*) *Trifolio-M*, GmbH Company, Lahnau, Germany.

locally available and less expensive materials for aphids control.

So, during the few last decades several attempts have been done to monitor insecticidal activity of neem tree, *Azadirachta indica* A. Juss extracts, which can be used as effective natural insecticides and also can be stored for reasonable time (shelfstability) as other conventional pesticides. Neem-based-biocides are now somehow in hand and a few of Neem-ingredients are available in different formulations for controlling numerous specieses of pests. In the available literature, NeemAzal formulations are considered as one of the most effective Neem preparations, which can be used and marketed as pest biocontrol agents (Kelany et al., 1991; Kleeberg, 1992; Schmutterer, 1995; Omara and El-Said, 1999 and Kelany, 2001). Many authors found that different species of Homopterous were susceptible to NeemAzal formulations such as Dimetry and El-Hawary, (1995); Omara Shadia et al., (1997); Schulz et al., (1997); Upadhyay and Mishra, (1999) and Singh & Venkateswarlu, (2000).

The aims of the present work were to study the effect of different concentrations and number of applications of NeemAzal-T/S (1% Azadirachtin) and NeemAzal-T (5% Azadirachtin) on the cowpea aphid, *Aphis craccivora* Koch infesting

broad bean plants, impact and on yield and yield characters of broad bean.

MATERIALS AND METHODS

The present experiments were carried out at the experimental farm of the Faculty of Agriculture at El-Khattara, Sharkia Governorate, A.R. Egypt to study the effect of two NeemAzal formulations on the cowpea aphid, *Aphis craccivora* Koch. infesting broad bean *Vicia faba* L. Giza 461. It was sown on the 3rd and 5th of November of 1997/1998 and 1998/1999, respectively. The experimental area (252 m²) was divided into plots of 6m² (2x3) each in a completely randomized plot design. The normal agricultural practices were followed and no pesticidal treatments were applied during the experimental period.

The application of NeemAzal:

Two formulations of NeemAzal; NeemAzal-T/S (1% Azadirachtin A), at concentrations of 20, 40 and 60 ppm and NeemAzal-T (5% Azadirachtin A) at concentrations of 50, 100 and 150 ppm. Each treatment, as well as untreated check was replicated three times. The experimental area was divided to two equal parts, the first part sprayed once, on the 3rd and the 5th

of December (30 days after sowing date) during 1997/1998 and 1998/1999 seasons, respectively. While, the second part of the experimental area was sprayed twice; the first spray was applied on the 3rd and 5th of December and the second one was excepted on the 17th and 14th of January during 1997/1998 and 1998/1999 seasons. The untreated check plots were sprayed with water only.

Sampling technique:

To estimate the level of infestation with the cowpea aphid, samples of five plant's tiller were randomly collected from each plot just before each application and at 1, 2, 5, 7, 10 and 14 days after spraying and continued weekly till harvesting time. Plant samples were placed individually in paper bags and examined under laboratory. Where the total number of *A. craccivora* (nymphs and adults) were recorded. Then, the reduction percentages of the tested pest was calculated.

Yield evaluation:

To study the effect of two tested formulations of NeemAzal on some yield characters at harvest time, two rows/plot from which no samples were taken, were chosen to estimate the following measurements:

- 1- Mean number of pods/tiller.
- 2- Mean number of seeds/pod.
- 3- Seed index [weight of 100 seeds (g.)].
- 4- The average yield (g/m²)

The obtained data were statistically analyzed. The proper F and L.S.R values were calculated according to Fisher, (1950) and the means were compared according to Duncan's Multiple range test, Snedecor, (1970).

RESULTS AND DISCUSSION

Effect of NeemAzal treatment against *A. craccivora* infesting broad bean under field conditions:

- a- *Effect of single and double applications with NeemAzal formulations on the mean number of *A. craccivora*.*

1- *Effect of single application with NeemAzal formulations*

Data presented in Tables (1, 2) showed that all concentrations of the two tested NeemAzal formulation reduced the mean number of aphids significantly compared with the untreated plots, except those treated with NeemAzal-T (50ppm) in both seasons.

After spraying with NeemAzal-T/S the mean number of aphid decreased and continued till to decrease 10 days after application. this means that the residual effect of

Table (1): Effect of single application of two NeemAzal formulations on *A. craccivora* infesting broad bean plants under field conditions during 1997/1998 season at El-Khattara, Sharkia governorate.

Sampling dates	Control	NeemAzal-T/S			NeemAzal-T		
		20	40	60	50	100	150
Dec 3	13.00	19.00	18.33	16.67	17.33	13.67	15.67
4	15.00	13.67	11.67	8.00	13.67	8.67	8.33
5	16.33	8.33	7.33	6.00	9.33	6.00	6.00
8	19.00	8.00	6.33	5.67	12.67	7.00	8.67
10	23.33	13.00	6.00	5.00	19.67	13.67	12.33
13	28.33	21.67	10.67	8.00	25.00	18.67	18.00
17	35.67	23.00	18.00	14.00	35.00	26.33	28.00
24	41.00	23.67	18.33	15.33	39.67	30.00	30.33
31	56.33	29.67	24.67	19.00	47.00	38.00	35.67
Jan 7	33.00	19.67	14.00	12.67	28.33	28.00	22.33
14	23.33	19.33	11.67	8.00	22.67	19.00	16.00
21	27.00	17.00	14.67	12.67	27.00	23.67	19.00
28	32.67	18.67	16.67	14.67	30.67	25.00	21.33
Feb 4	60.00	33.33	27.00	25.67	47.33	43.67	40.67
11	75.33	48.00	38.33	36.67	70.00	66.33	55.33
18	94.67	59.33	50.67	44.67	87.00	80.33	65.00
25	101.33	64.67	56.33	50.00	98.00	86.67	78.67
Mar 4	148.33	85.33	70.67	64.67	123.67	104.33	92.00
11	62.00	31.33	25.00	22.00	53.00	42.67	37.33
18	31.33	21.67	16.33	17.33	30.00	25.67	22.00
25	18.33	14.67	12.00	12.33	17.00	14.00	13.67
Total	961.65	577.98	473.67	325.02	854.01	720.02	645.33
Mean±	45.79 a	27.52 cd	22.60 de	20.24 e	40.66 ab	34.29 bc	30.73 c
S.d	± 34.74	± 20.01	± 17.39	± 16.04	± 30.51	± 27.66	± 23.68
Reduction %		39.89	50.63	55.80	11.20	25.12	32.89

The numbers in the same row followed by the same letter are not significantly different at $P = 0.05$.

Table (2): Effect of single application of two NeemAzal formulations on *A. craccivora* infesting broad bean plants under filed conditions during 1998/1999 season at El. Khattara, Sharkia governorate.

Sampling dates	Control	NeemAzal-T/S			NeemAzal-T		
		20	40	60	50	100	150
Dec 5	18.67	16.00	21.33	25.33	25.00	23.00	18.67
6	20.67	11.67	13.67	14.00	19.67	16.67	11.00
7	23.00	8.67	10.67	11.67	15.67	11.67	8.33
10	27.33	8.33	9.33	10.00	18.33	13.00	8.00
12	30.67	8.00	8.33	9.00	23.33	17.00	11.67
15	35.33	15.00	14.33	11.00	29.00	22.67	16.00
19	42.33	19.67	17.00	14.33	33.67	26.33	23.00
26	33.67	17.67	15.67	13.67	28.00	20.00	19.33
2	23.00	15.00	13.67	12.00	18.00	17.33	16.33
Jan. 9	18.67	13.00	12.33	11.00	16.67	16.00	15.00
16	23.00	16.67	15.67	15.00	22.67	18.00	17.67
23	25.00	22.00	20.00	17.67	25.33	22.67	21.67
30	33.67	25.67	24.00	18.00	30.00	25.67	25.33
Feb. 6	49.67	36.00	30.67	26.33	40.00	41.67	38.67
13	83.00	47.00	40.00	39.33	76.67	63.00	60.00
20	98.33	58.33	50.67	46.67	90.33	77.67	71.33
6	54.00	42.67	41.67	32.67	52.00	48.67	45.67
Mar 13	36.67	27.00	24.67	18.00	34.67	31.00	29.67
20	32.67	17.00	16.33	14.33	27.00	27.67	23.00
27	21.33	13.67	11.00	11.00	21.00	15.00	15.67
	14.00	10.67	9.33	8.00	14.00	18.00	15.67
Total	744.01	449.67	420.34	379.00	666.66	570.67	850.68
Mean±	35.43 a	21.41 de	20.02 de	18.05 e	31.75 ab	27.18 bc	24.32 cd
S.d	±21.12	±13.71	±11.68	±10.38	±19.57	±17.07	±16.60
Reduction %		39.56	43.50	49.06	10.40	23.30	31.36

The numbers in the same row followed by the same letter are not significantly different at $P = 0.05$.

this formulation may last for more than a week. It is anticipated that NeemAzal-T/S is partially protected from photodegradation and oxidation, resulting in a better residual action than that obtained by NeemAzal-T as it reduced the mean number of aphids for 5 days only then the population increased sharply, however, in case of NeemAzal-T/S the population increased gradually and slightly. Similar trends were noticed in both seasons.

The present findings agreed with Chiu, (1989) who reported that a single application of Neem Kernal extract provided protection to cabbage from *Pieris rapae L.* for up to 21 days. Omara and El-Said, (1999) found that NeemAzal formulations (T/S&T) gave significant protection to cotton plants when applied for only a single spray. These results may be due to the protective properties of azadirachtin including feeding and ovipositional deterrence, repellency growth regulator and sterility to many species of insects, According to Schmutterer, (1990). In addition the most of NeemAzal formulation classified as slightly harmful to the natural enemies Henkle et al., (1997); Hermann et al., (1997) and Kelany, (2001).

A negative relation-ship was found between the concentrations of both NeemAzal formulations and the mean numbers of aphid. Such findings are in agreement with those of Omara et al., (1997) and Omara & El-Said, (1999).

2- Effect of double applications of NeemAzal formulations:

Data presented in tables (3 and 4) showed that the reduction percentages in the mean number of aphids increased gradually as the concentration of both NeemAzal-T/S and NeemAzal-T increased during the two successive study seasons.

Data also indicated that the two tested NeemAzal formulations affected significantly the mean number of *A.craccivora* attacking broad bean plants under field conditions as compared with the control treatment during both seasons. Similar findings were reported by. Dimetry and Schmidt, (1991); Doblin, (1996); Upadhyay and Mishra, (1999) and Singh & Veukateswarlu, (2000).

Generally, NeemAzal-T/S was more effective than NeemAzal-T, for both of single and double applications during the first and the second season. Such findings are agreed with that obtained by

Table (3): Effect of double applications of two NeemAzal formulations on *A.craccivora* infesting broad bean plants under field conditions during 1997/1998 season at El-Khattara, Sharkia governorate .

Sampling dates	Control	NeemAzal-T/S			NeemAzal-T			
		20	40	60	50	100	150	
<i>Mean numbers of A.craccivora</i>								
Dec.	5	15.67	14.00	20.67	23.00	18.00	15.00	19.00
	6	16.67	13.00	12.33	12.67	13.67		10.33
	7	18.00	8.33	8.00	6.67	8.67	6.00	6.00
	10	21.00	7.00	6.33	5.33	9.00	8.33	10.00
	12	24.67	7.67	6.00	5.00	14.67	11.33	12.00
	15	27.67	10.67	9.67	7.33	18.00	14.00	16.33
	19	31.00	15.67	15.00	11.00	26.33	20.67	23.00
	26	34.67	20.00	18.00	13.00	36.00	29.33	30.00
Jan.	2	54.33	23.67	20.00	15.00	45.33	33.67	34.00
	9	32.00	14.33	16.33	13.67	29.67	25.00	23.67
	16	24.67	16.00	15.67	11.33	23.00	18.67	17.00
	19	17.67	4.67	10.00	9.00	13.33	11.67	10.67
	20	15.67	6.67	6.00	5.33	9.00	7.33	6.33
	21	14.67	3.67	3.33	3.33	6.67	5.00	4.33
	24	22.00	4.67	4.00	3.00	8.67	7.67	4.00
	26	25.33	6.67	5.00	3.00	12.00	9.33	6.67
	29	24.00	10.67	7.00	3.33	16.33	12.67	11.67
Feb.	2	34.00	13.67	9.67	5.67	22.67	17.00	14.67
	9	49.00	17.00	16.00	12.67	30.00	20.67	20.00
	16	76.33	24.67	20.00	16.67	52.33	38.00	26.33
	23	101.67	32.00	28.67	21.33	66.00	49.67	39.00
Mar.	2	142.33	35.67	32.00	28.33	90.67	73.00	46.33
	9	64.00	20.00	18.33	15.00	43.00	32.00	25.00
	16	35.33	13.00	11.67	12.33	27.00	23.00	19.00
	23	14.00	11.67	8.00	10.67	18.33	16.00	16.33
	30	12.33	9.00	8.67	7.00	13.00	10.67	10.00
Total		968.68	379.38	336.34	277.66	671.34	525.35	461.65
Mean ±S.d		3726a ±30.029	1443de ±8.13	1293e ±7.38	1067e ±6.47	2582b ±19.93	2021c ±15.40	1767cd ±10.86
Reduction rate %			61.25	65.28	71.33	30.70	45.76	52.33

The numbers in the same row followed by the same letter are not significantly different at P = 0.05.

Table (4): Effect of double applications of two NeemAzal formulations on *A.craccivora* infesting broad bean plants under field conditions during 1998/1999 season at El-Khattara - Sharkia governorate.

Sampling dates	Control	NeemAzal-T/S			NeemAzal-T			
		20	40	60	50	100	150	
<i>Mean numbers of A.craccivora</i>								
Dec.	3	21.00	21.00	28.00	27.33	23.67	20.67	26.00
	4	23.67	14.67	17.00	16.00	17.33	14.33	18.00
	5	24.33	9.67	11.33	11.00	12.67	9.33	12.33
	8	26.00	8.67	10.33	10.33	14.00	10.67	11.67
	10	28.00	8.00	10.00	9.00	17.67	12.33	12.00
	13	33.67	11.00	12.33	9.67	22.00	18.00	17.00
	17	40.67	16.67	16.00	13.00	31.33	24.67	21.00
	24	31.00	16.00	15.00	12.67	23.00	19.67	18.00
	31	25.00	14.67	13.00	12.00	20.67	17.33	15.33
Jan.	7	20.00	14.00	13.00	11.00	18.33	16.00	15.67
	14	16.33	14.33	12.00	10.67	16.33	14.67	13.33
	17	15.67	11.33	11.00	10.00	14.00	13.67	12.00
	18	17.00	9.33	8.67	7.67	12.33	11.00	10.33
	19	19.67	6.67	5.00	4.33	8.67	7.67	6.00
	22	23.00	6.33	5.00	4.00	11.67	10.00	8.33
	24	28.33	9.00	8.33	5.67	15.00	13.33	11.00
	27	39.00	11.67	10.00	7.00	25.67	14.00	14.00
	31	47.00	16.33	16.00	12.00	33.00	25.00	22.67
Feb.	7	60.67	19.67	20.33	14.67	42.67	29.00	30.33
	14	86.33	27.00	24.67	18.67	50.33	35.33	28.67
	21	49.67	22.00	21.00	15.33	32.00	20.67	17.00
	28	37.33	20.33	17.67	14.67	20.33	18.67	15.00
Mar.	7	28.67	18.00	15.67	13.00	24.00	18.00	13.67
	14	28.00	13.00	10.67	11.67	19.00	14.33	14.00
	21	17.00	11.67	9.67	9.00	14.33	15.00	11.67
	28	11.67	10.00	7.33	7.67	12.00	10.00	10.00
Total		803.01	361.01	349.33	298.02	552.00	428.34	405.00
Mean±S.d		30.89 a ± 16.21	13.89 cd ± 5.19	13.43 cd ± 5.63	11.46 d ± 4.80	21.23 b ± 9.89	16.47 bc ± 6.45	15.58 c ± 5.99
Reduction rate %			55.05	56.50	62.89	36.75	46.67	49.57

The numbers in the same row followed by the same letter are not significantly different at P = 0.05.

Hummel and Kleeberg, (1997) on *Acythosiphon pisum* Harris. Omara & El-Said, (1999) on *Earias insulana* Boisd. Basha and Kelany, (2001) on *Tetranychus urticae* Koch. They concluded that NeemAzal-T/S was highly effective, as showed high mortality and reduced the infestation percentages than NeemAzal-T. This may be due to that NeemAzal-T/S can translocate and penetrate (Semisyste-mic) the plant tissues. Moreover, Neem ingredients are considered as larval repellents and ovipositional deterrents. Osman and Port, (1990) and Hummel & Kleeberg, (1997) found that the transportation of active ingredient of Neem Kernels from the upper leaf surface into the leaf is a fast and effective process in order to reach the sucking sites of aphids for pest control purposes. Also Metspalu et al., (2000) found that NeemAzal-T/S affected bean aphids via direct toxicity and later repellent and deterrent modes of actions and added that aphids due to their thin cuticles, seemingly very susceptible to the contact action of NeemAzal-T/S.

It can be concluded that double applications were better than the single one, where the reduction percentages in aphid population in

case of double application were higher than that in case of the single one and the reduction percentages reached its maximal value in case of NeemAzal-T/S (60 ppm) in the double application, while the minimal values were obtained in case of NeemAzal-T (50 ppm) in the single application.

This conclusion is in accordance with that of Hapke et al., (1997) who stated that the colonies of *Dysaphis plantaginea* Pass. on sour cherry in the plots that were treated once with NeemAzal-T/S, increased again, while in the plots that treated twice the colonies stayed at low level after the second treatment. Also, Dreyer, (1986) found that using two applications of aqueous NeemKernel extracts or Kernel powder gave significant protection to corn plant from the infestation with the larvae of *Spodoptera frugipedra*.

b- Effect of single and double application with NeemAzal formulations on yield and yield contributing characters of broad bean:

1- Effect of single application with NeemAzal formulations:

Results in Table (5) indicated that all concentrations of both NeemAzal formulations showed sig-

Table (5): Effect of a single application with NeemAzal treatment on broad bean yield and yield contributing factors.

NeemAzal con. (ppm)	1997/1998					1998/1999				
	Mean no. of pods/tiller	Mean no. of seeds/pod	Seed index*	Seed yield		Mean no of pods/tiller	Mean no. of seeds	Seed index*	Seed yield	
				Average (g)**	Increase %				Average (g)**	Increase %
T/S 20	7.43	3.08	40.68 b	302.81 c	9.87	7.40	3.7	39.87 abc	307.95 bc	8.60
40	7.40	3.09	41.35 a	308.12 b	11.80	7.46	3.9	40.79 a	313.62 ab	10.60
60	7.52	3.10	41.59 a	315.61 a	14.52	7.49	3.9	40.53 ab	317.57 a	12.00
T/S 50	7.20	3.05	39.86 c	294.72 d	7.43	7.26	3.06	39.36 c	299.00 de	5.44
100	7.32	3.05	40.32 bc	296.08 d	7.43	7.26	3.06	39.36 c	299.00 de	5.44
150	7.29	3.07	40.51 b	302.25 c	9.67	7.27	3.07	39.58 bc	304.90 dc	7.52
Control	7.19	2.97	39.02 c	275.60 e	-	7.09	2.90	38.27 d	283.57 f	-

* Weight of 100 seeds

** The average yield (g/m²)

The numbers in the same row followed by the same letter are not significantly different (Duncan's multiple range test, *Snedecor, 1970*).

Table (6): Effect of double applications with NeemAzal treatments on broad bean yield and yield contributing factors.

NeemAzal con. (ppm)	1997/1998					1998/1999				
	Mean no. of pods/tiller	Mean no. of seeds /pod	Seed index*	Seed yield		Mean no. of pods/tiller	Mean no. of seeds	Seed index*	Seed yield	
				Average (g)**	Increase %				Average (g)**	Increase s %
T/S 20	7.58	3.09	40.94 b	312.71 c	15.57	7.49	3.08	41.20 bc	317.49 b	14.14
40	7.66	3.11	41.03 b	317.34 b	17.27	7.52	3.10	41.73 ab	322.70 a	16.01
60	7.62	3.12	41.87 a	321.60 a	18.85	7.55	3.10	42.00 a	326.12 a	17.24
T 50	7.40	3.09	39.22 d	310.03 c	14.58	7.39	3.06	40.15 d	309.28 d	11.18
100	7.45	3.08	39.79 cd	310.25 c	14.66	7.41	3.08	40.88 c	311.32 cd	11.92
150	7.47	3.09	40.01 c	311.16 c	15.00	7.43	3.04	41.07 c	314.82 bc	13.18
Control	7.16	2.98	38.00 e	270.59 d	-	7.11	2.85	38.09 e	278.17 e	-

* Weight of 100 seeds

** The average yield (g/m²)

The numbers in the same row followed by the same letter are not significantly different (Duncan's multiple range test, *Snedecor, 1970*)

nificant differences in the average weight of 100 seeds of the treated plots as compared with that of untreated ones in both study seasons. NeemAzal-T (50 ppm) did not give significant differences in the second season (1998/99).

Concerning the total yield, it was observed that all treatments increased significantly the yield of broad bean compared with that of untreated check in the first season, but in the second one plots treated with NeemAzal-T (50ppm) did not give significant difference as compared with the untreated check plots.

2- Effect of double applications with NeemAzal formulations:

The summarized results in Table (6) indicated that all concentrations of the two NeemAzal formulations increased the average weight of 100 seeds of the treated plots significantly as compared with the untreated check. Results agreed with those of Vogt et al., (1996) who found that yield losses caused by *Dysaphis plantaginea* Pass. on apple were significantly lower in the Neem-treated plots than in the control plots.

As for the total seed yield, it was obvious that the yields of all treatments were increased significantly with all concentrations as compared with that of the untreated check in both seasons. Results

agreed with Mariappan & Jayaraj (1992) and Upadhyay & Mishra (1999), as they reported that the total seed yield per plant increased significantly after treating the plants with NeemAzal formulations against aphids infesting cotton plants compared with the yield of untreated plots.

In general, the average weight of 100 broad bean seeds and the total seed yield of the plots treated with both NeemAzal formulations with single or double applications increased significantly. In plots treated with NeemAzal-T (50 ppm) once yield increased insignificantly. This result may be due to the serious damage caused by aphids not only be direct damage due to the consumption of plant sap but also by indirect damage due to their role as a vector of pathogens particulars virus disease, as well as softy mold fungi, which interfere with the photosynthesis process of their host plant. According to El-Ghar & Esmail, (1991). Such findings need more details study.

Also, data indicated that the average weight of 100 seeds and the seed yield of the plots received NeemAzal-T/S was more than that of the plots treated with NeemAzal-T, where the highest value of total seed yield was in case of the plots treated with the high concentration of NeemAzal-T/S in the double

application, while the plots treated with the lowest concentration of NeemAzal-T in the single application gave lower yield value which was more than that of untreated check plots. The present results are in agreement with the results of Pandey & Faruqi, (1998) and Omara & El-Said, (1999) who stated

that cotton yield in case of NeemAzal-T/S against *E. insulana* Boisd was proportionally more than that in case of NeemAzal-T which was more than of the untreated check and that highest yield was obtained when plants were sprayed twice with the highest concentration of NeemAzal-T/S.

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تأثير صورتين مختلفتين لمستحضر النيم على حشرة من البقوليات
التي تصيب الفول البلدى فى منطقة الخطارة محافظة الشرقية

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تم دراسة تأثير مستحضر النيم فى صورتين مختلفتين وهما نيمزال -تى/إس (١% فى لىزقزق) و نيمزال - تى (٥% أذراختين) على تعداد حشرة من البقوليات على نباتات الفول البلدى وعلى الصفات للكمية لمحصول الفول وكذلك اختبار عدد الرشاش (رشاة واحدة ، رشتين) مع الاعتماد على التأثير المتبقى للمستحضر المرشوش على نباتات الفول فى منطقة الخطارة محافظة الشرقية وذلك خلال الموسمين الزراعيين ١٩٩٨/٩٧ ، ١٩٩٩/٩٨ .

وقد وجد أن التركيزات العالية لكلا المستحضرين أدت الى خفض متوسط تعداد المن على النباتات وأنه كلما زادت التركيزات المستخدمة من كلا المستحضرين يقل أيضا عدد الحشرات الموجودة ويؤدى التأثير المتبقى لكلا المركبين الى حماية نباتات الفول من الاصابة بحشرات المن لمدة حوالى عشرة أيام .

وقد وصل معدل انخفاض الاصابة الى أقصاه فى كلا الموسمين عند استخدام التركيز الأعلى (٦٠ جزء فى المليون) من مستحضر نيمزال -تى/إس وذلك فى حالة الرش مرتين ، وكان محصول الفول المعامل بمستحضر نيمزال -تى/إس أعلى من محصول الفول المعامل بمستحضر نيمزال تى والذي كان بدوره أعلى من المحصول فى حالة المقارنة .

وبصفة عامة فإن مستحضرى النيمزال المختبرين فى هذه الدراسة ، حتى بالتركيزات المنخفضة ، يمكن التوصية باستخدامها للتقليل من الاصابة بحشرة من البقوليات فى حقول الفول كأحد عناصر مكافحة متكاملة لآفات هذا المحصول للبقولى الهام .