

Efficacy of Different Granular Insecticides Against Jassids, Aphids and Shoot and Fruit Borer of Brinjal (*Solanum melongena* L.)

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ABSTRACT

Three granular insecticides viz., aldicarb, carbofuran and disulfoton were tested for their efficacy against aphids, jassids and fruit borer of brinjal at Navsari, Gujarat State during 1980-81. Carbofuran and aldicarb treatments were significantly effective in reducing the infestation level of aphid, jassid and fruit borer upto 30, 50 and 90 days, respectively after application of insecticides, while disulfoton was found significantly effective in reducing the population level of aphid and fruit borer upto 30 and 70 days, respectively after application of insecticides. So far yield in terms of weight and number of healthy fruits are concerned, carbofuran was at top.

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INTRODUCTION

Brinjal crop is widely cultivated in all the seasons i.e. in kharif, winter and summer season in South Gujarat area. The intensive cultivation of this crop has resulted into severe infestation to the crop by insect pests in this area. The crop is mainly infested by sucking insects like aphids and jassids and shoot and fruit borer from time of planting till harvest. Many workers have suggested insecticidal schedule comprising of initial application of granular insecticides which is subsequently followed by foliar application of insecticides for the control of the insect pest of brinjal. Christudes *et al.* (1976) reported that soil treatment with granules containing phorate and disulfoton

(thiodemeton) significantly reduced attack of leaf feeding insects of brinjal. Uthamaswamy *et al.* (1973) found that soil treatment of Temik and Disyston is effective for the control of sucking pests like aphids and jassids of brinjal. Similarly Deshpande *et al.* (1974) and Mote (1978) recommended treatments comprising of initial application of granular insecticides in the soil followed by 2 to 3 foliar applications of insecticides for the effective control of various insect pests of brinjal. The present paper deals with the field trial carried out during 1980-81, to know the efficacy of different granular insecticides against sucking pests like aphids and jassids as well as against shoot and fruit borer of brinjal, so as to incorporate the best treatment in plant pro-

tection schedule to be worked out for the control of brinjal pest complex.

MATERIALS AND METHODS

A field experiment was conducted during the year 1980-81 on the farm of N. M. College of Agriculture, Gujarat Agricultural University, Navsari, with four treatments including control, replicated 6 times. Seedlings of the brinjal variety Bilimora Bhadtha were transplanted in plots of 7.5 m x 3.6 m size. The spacings were kept as 0.90 m between rows and 0.75 m between plants. Regular agronomical practices were adopted. Soil application of granular insecticides *viz.*, aldicarb 10 G, carbofuran 3 G and disulfoton 5 G @ 1.5 kg- a.i./ha were given 24 days after transplanting. Thereafter insecticidal treatment was not given either in the form of foliar spray or soil application.

Periodical observations on the incidence of aphids and jassids were taken. Five plants were randomly selected from each plot and the number of aphids as well as number of jassids found on three leaves (top, middle, bottom) of each plant were counted and recorded. For fruit borer, number and weight of healthy fruits as well as fruits with bore holes in each plot were recorded at the time of each picking. Finally the cumulative yield in terms of weight of healthy fruits and number of healthy fruits obtained in each treatment were recorded. The data were analysed statistically following randomised block design.

RESULTS AND DISCUSSION

The mean population level of aphids and jassids is given in Table-1. It is

TABLE 1
Effect of granular insecticides on the mean population of aphids and jassids in brinjal.

Treatments	Mean population★of			
	Aphids		Jassids	
	30 DAA + 50 DAA	30 DAA	50 DAA	
Aldicarb	1.58	3.01	1.59	1.70
10 G.	(1.49)	(8.06)	(1.52)	(1.89)
Carbofuran	1.79	2.16	1.65	1.23
3 G	(2.20)	(3.66)	(1.72)	(0.51)
Disulfoton	2.74	2.08	3.07	1.84
5 G	(6.50)	(3.72)	(8.42)	(2.38)
Control	5.15	4.96	3.98	2.25
	(25.52)	(23.60)	(14.84)	(4.06)

S. Em $\pm$ 0.61 2.44 0.60 0.31

C.D @ .5% 1.83 N.S. 1.80 0.92

★Figure in the parenthesis are retransformed values.

* $\sqrt{X + 1}$ transformation was used
*days after application.

evident that all the granular insecticides were at par in controlling the aphids upto 30 days after application. Aldicarb recorded the lowest population level and was followed by carbofuran and disulfoton. There was no significant difference amongst treatments in reducing aphid population after 50 days of application of insecticides. Carbofuran and aldicarb were found effective in controlling jassid population upto 50 days after application and they were at par with each other. Disulfoton has also recorded less number of jassid population but it was at par with control. Mean percentage of damaged fruit by fruit borer in first three pickings as

well as average yield in kg. per plot and average number of healthy fruits are given in Table-2. It was observed that plot treated with carbofuran showed the least fruit damage by fruit borer upto 90 days after application of insecticides and it was followed by aldicarb treatment, while disulfoton remained effective in checking the damage to fruits by fruit borer only upto 70 days after application.

As far as the yield is concerned only carbofuran treatment recorded sig-

nificantly higher yield in comparison with all other treatments. Although, aldicarb and disulfoton treatments also resulted in higher yield, they were at par with control. No treatment could significantly increase the number of healthy fruits over control. However in the carbofuran treatment, average number of healthy fruits was higher in comparison with that in other treatments.

From the results it can be concluded that carbofuran treatment was

TABLE 2

Effect of granular insecticides on mean percentage damage of fruits by brinjal fruit borer, yield and number of healthy fruits.

Treatments	Mean percentage of damaged fruits			Average yield in kg./plot	Average number of healthy fruit
	1st picking 70 DAA*	2nd picking 90 DAA	3rd picking 100 DAA		
Aldicarb 10 G.	27.74 (21.00)	32.45 (28.80)	49.83 (58.40)	16.77	123.00
Carbofuran 3 G.	34.19 (31.60)	18.78 (10.40)	44.14 (48.50)	22.23	149.66
Disulfoton 5 G.	39.78 (40.90)	39.78 (40.90)	53.85 (65.20)	16.50	134.69
Control	56.48 (69.50)	56.48 (69.50)	57.85 (71.70)	15.68	130.33
S. Em. $\pm$	3.81	6.52	4.69	1.66	13.37
C.D. @ 5%	11.44	19.59	N.S.	4.98	N.S.

Figure in the parenthesis are retransformed values.

*Days after application.

found best in reducing the initial infestation level of aphid, jassid and brinjal fruit and shoot borer. It was also found effective in increasing the yield significantly which may be due to the low infestation level of fruit borer in carbofuran treatment in early stage of crop. Aldicarb was found equally effective in initial control of the insect pest as compared to carbofuran, while disulfoton was effective upto 30 days against aphids and upto 70 days against fruit borer.

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