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EFFICACY OF CHEMICAL INSECTICIDES ON SOYBEAN WHITE FLY

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ABSTRACT

The present field experiment was conducted during Kharif, 2011 at the farmers' field of Neemuch (Madhya Pradesh). The experiment was laid out in Randomized Block Design (RBD) with six treatments including untreated control replicated thrice. Among the insecticidal treatments, Imidacloprid 17.8 % SL @ 300 ml/ha was found effective followed by Lambda cyhalothrin 5% EC 300ml/ha which were at par with each other and the next superior treatments were Triazophos 40 % EC 800ml/ha, Indoxacarb 14.5% SC 500ml/ha and Chlorantraniliprole 20 % SC150ml/ha which were at par with each other. The highest yield was obtained in plots treated with Imidacloprid 17.8 % SL @ 300 ml/ha (1925kg/ha) followed by Lambda cyhalothrin 5% EC 300ml/ha (1805 kg/ha), Triazophos 40% EC 800ml/ha (1790 kg/ha), Indoxacarb 14.5% SC 500ml/ha (1775kg/ha), Chlorantraniliprole 20 %SC (1760kg/ha) and untreated control (1690kg/ha).

Keywords: soybean, insect pest, chlorantraniliprole, white fly

INTRODUCTION

Soybean (*Glycine max (L) Merr.*) is one of the most important leguminous crops belonging to family Leguminosae, subfamily Papilionodeae. It is a rich source of protein (40 per cent) and edible oil (20 per cent). It is considered as pulse crop but due to high oil content, now it is placed in oilseeds category. It originated from China and was introduced in India in 1870-80 (Andole, 1984).

Its importance is increasing day by day due to its high nutritive value. Now a days, protein caloric malnutrition is wide spread in our country. This is because majority of Indian population is vegetarian and solely depends on pulses for their protein requirement. Soya protein possesses an excellent combination of major essential amino acids that human body requires. For vegetarians, it is known as “poor man's meat”. Owing to the absence of sugar content, it is considered to be very suitable diet for diabetic patients; Soybean is also rich in soluble phosphate and sulphur (Bower 1939).

MATERIALS AND METHODS

Field experiment was conducted during Kharif seasons of 2011 at the farmers' field of Neemuch (Madhya Pradesh). All the recommended cultural and agronomical practices were imparted to the farmers to raise the crop. The experiments were laid out in Randomized Block Design (RBD) replicated thrice with gross plot size 4.00 m X 3.00 m. The soybean variety JS-9560 was sown at a spacing 45 cm X 5 cm.

Treatment details

T1 - Chlorantraniliprole 20 % SC150ml/ha
T2 – Lambda cyhalothrin 5% EC 300ml/ha
T3 - Triazophos 40 % EC 800ml/ha
T4 - Indoxacarb 14.5% SC 500ml/ha
T5 - Imidacloprid 17.8 % SL @ 300 ml/ha
T6 - untreated control

Statistical analysis

The per cent infestation of white flies were calculated and subjected to angular transformation, the average number of white flies per plant were worked out and transferred by using Poisson formula $\sqrt{x+0.5}$ before analysis. The data pertaining to infestation, white flies count, after their transformation, were statistically analyzed by standard analysis of variance method (Panse and Sukhatme 1967).

RESULTS AND DISCUSSION

First Spray

Data presented Table 1 about population of whiteflies/3 leaves 3 days after first spraying exhibited that lowest count was found T5 (Imidacloprid) followed by T2 (Lambda cyhalothrin), T3(Triazophos) followed by T4 (Indoxacarb) and T1 (Chlorantraniliprole) which were at par with each other. All the insecticidal treatment

Table 1. Effect of chemical insecticides on incidence of White fly (*Bemisia tabaci*) after first spray

S. No.	Treatments	Average no of White fly/ plant day after first spraying			
		1 Day Before	3 DAS	7 DAS	10 DAS
1.	Chlorantraniliprole 20% SC@150 ml/ha	2.4 (1.70)	0.80 (1.14)	1.00 (1.22)	1.39 (1.38)
2.	Lambda cyhalothrin 5% EC @ 300 ml/ha	2.6 (1.76)	0.38 (0.94)	0.60 (1.05)	0.98 (1.22)
3.	Triazophos 40% EC @ 800 ml/ha	2.4 (1.72)	0.60 (1.05)	0.79 (1.14)	1.19 (1.30)
4.	Indoxacarb 14.5% SL @ 300 ml/ha	2.5 (1.74)	0.75 (1.12)	0.98 (1.22)	1.39 (1.37)
5.	Imidacloprid 17.8 % SL @ 300 ml/ha	2.5 (1.74)	0.19 (0.83)	0.39 (0.95)	0.77 (1.13)
6.	Untreated	0.029	2.79 (1.81)	2.99 (1.87)	3.19 (1.92)
	SEM	0.087	0.023	0.027	0.035
	CD at 0.05%	0.087	0.070	0.080	0.107

Figure in parenthese are √x+0.5 Transformed Values.

Table 2. Effect of chemical insecticides on incidence of whitefly *(Bemisia tabaci)* after second spray

S. No.	Treatments	Average no of White fly/ plant day after first spraying			
		1 Day Before	3 DAS	7 DAS	10 DAS
1.	Chlorantraniliprole 20% SC@150 ml/ha	8.38 (2.98)	6.35 (2.62)	6.53 (2.65)	7.17 (2.77)
2.	Lambda cyhalothrin 5% EC @ 300 ml/ha	8.17 (2.94)	3.53 (2.01)	3.77 (2.07)	4.19 (2.16)
3.	Triazophos 40% EC @ 800 ml/ha	8.57 (3.01)	4.37 (2.21)	4.75 (2.29)	5.36 (2.42)
4.	Indoxacarb 14.5% SL @ 300 ml/ha	8.34 (2.97)	6.14 (2.58)	6.38 (2.62)	6.78 (2.70)
5.	Imidacloprid 17.8 % SL @ 300 ml/ha	8.39 (2.98)	1.99 (1.58)	2.19 (1.64)	2.38 (1.70)
6.	Untreated	8.99 (3.08)	9.18 (3.11)	9.57 (3.17)	9.67 (3.19)
	SEM	0.050	0.060	0.053	0.037
	CD at 0.05%	0.150	0.181	0.159	0.111

Figure in parenthese are √x+0.5 Transformed Values.

significantly superior over untreated control (1.81%).

It was observed from Table 1 regarding the population of whiteflies/3 leaves 7and 10 days after first spraying that the population was slightly increased in treated plots. It was lowest in plots treated with T5 (Imidacloprid) followed by T2 (Lambda cyhalothrin), T3 (Triazophos) followed T4 (Indoxacarb) and T1 (Chlorantraniliprole) which were at par with each other However, all the insecticidal treatments were significantly superior over untreated control.

Second Spray

The data incorporated in Table 2 about the population of whiteflies/3 leaves 1 day before second spraying revealed that the population was more or less similar in all insecticidal treatments ranged from 8.17 (T2) to 8.99 (T6).

The result obtained regarding the population of

whiteflies/3 leaves 7 and 10 days after second spraying (Table 2) showed that all the insecticidal treatments were significantly superior over untreated control. The results of present investigation are in accordance with Venkateshan and Kundu (1994).

Yield

Highest yield was obtained from plots treated with T5 Imidacloprid 17.8 % SL @ 300 ml/ha (1925kg/ha) followed byT2 Lambda cyhalothrin 5% EC 300ml/ha (1805 kg/ha) ,T3Triazophos 40 % EC 800ml/ha (1790 kg/ha) ,T4 Indoxacarb 14.5% SC 500ml/ha (1775kg/ha), T1 Chlorantraniliprole 20 %SC(1760kg/ha) andT6 untreated control (1690kg/ha).

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