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EFFICACY OF INSECTICIDES AGAINST SOYBEAN GIRDLE BEETLE *OBEREOPSIS BREVIS*

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ABSTRACT

Six insecticides were evaluated against soybean girdle beetle *Obereopsis brevis* Swedenboard during kharif 2017 and 2018. The results revealed that chlorantraniliprole 0.4 GR@40 g a.i./ ha, clothianidin 50 WDG@125 g a.i./ ha and fipronil 0.3 GR@ 50 g a.i./ ha were superior in reducing the incidence and at par with each other. Chlorantraniliprole gave maximum yield followed by clothianidin, fipronil and thiamethoxam 30 FS.

Key words: Soybean, *Obereopsis brevis*, kharif, insecticides, seed/ soil treatment, phorate, chlorantraniliprole, clothianidin, fipronil, thiamethoxam, imidacloprid, yield, foliar spray, replacement

Soybean [*Glycine max* (L.) Merrill] is one of the most important leguminous crops and it is infested by 380 species of insects (Luckman, 1971). In Maharashtra, especially in Marathwada 19 species of insects attack this crop (Munde, 1982) Among them girdle beetle (*Obereopsis brevis* Swedenboard) and stem fly (*Melanagromyza sojae* Zehnter) are important. Ansari and Sharma (2005) observed that incidence of *O.brevis* girdle ranged from 19.5 to 30.72%. In soybean insect pests cause 20 to 25% annual loss in yield (Sharma and Shukla, 1997). Many times insecticides are used and these hampers the activity of parasitoid and predators due to the indiscriminate use (Ansari and Sharma, 2005). Foliar sprays of organophosphorus insecticides in soybean in its early stages are very common in Maharashtra. Foliar sprays of broad-spectrum insecticides in the early crop stage causes pest resurgence in crops (Way and Heong, 1994). The present study evaluates the efficacy of insecticides as seed treatments against *O. brev*is as a possible replacement for foliar sprays.

MATERIALS AND METHODS

The experiment was conducted in randomized block design with seven treatments and three replications. The gross and net plot size were 3.15 x 5.0 and 2.25 x 4.0 m, respectively. JS-335 variety was used at a spacing of 45x 5 cm. Six insecticides were evaluated viz. seed treatments with thiamethoxam 30FS and imidacloprid 48FS were used for treating seeds. Required quantity of soybean seed and insecticides were placed in a polythene bag and mixed thoroughly. The mixture was stirred to obtain uniform coating of insecticides before spread on a paper for drying. Soil application of granular insecticides viz. phorate 10CG, fipronil 0.3GR and chlorantraniliprole 0.4GR were done at the time of sowing, Soil drenching of clothianidin 50 WDG was done at 7-10 days after germination. Observations were made at 30, 45, 60, 75 and 90 days after sowing, with total number of plants and girdled plants counted in a meter row length (5 observations/ plot) and data computed as % infestation. The data (means) obtained were subjected to statistical analysis after square root transformation and analysed as per Gomez and Gomez (1984) using OPSTAT software. When the crop attained maturity, plot wise yield was recorded and converted into kg/ ha before statistical analysis.

RESULTS AND DISCUSSION

Efficacy of insecticides on % incidence by *O. brevis* during kharif 2017 presented in Table 1 reveal that chlorantraniliprole (4.79%), clothianidin (5.34%), fipronil (6.30%), imidacloprid (7.02%) and thiamethoxam (8.04%) gave least values which were at par with each other; with phorate 10CG (8.87%) and control (10.50%) incidence was more. During kharif 2018, chlorantraniliprole (4.14%), clothianidin (4.55%) and fipronil (4.66%) were superior. The pooled data revealed that chlorantraniliprole (4.46%) and clothianidin (4.94%) followed by fipronil (5.48%) and thiamethoxam (6.60%) were the best. Choudhary et al. (2018) reported that soil application

Table 1. Efficacy of insecticides against *O. brevis* (kharif 2017 and 2018)

T. No.	Treatments	Dose (g a.i / ha)	Infestation (%) 2017	2018	Pooled	Grain yield q/ ha Pooled
T-1	Thiamethoxam 30FS	225	8.04 (12.92)*	5.16 (13.06)	6.60 (12.99)	23.42
T-2	Imidacloprid 48FS	75	7.02 (16.96)	6.61 (14.86)	6.81 (15.91)	23.06
T-3	Phorate 10CG	1500	8.87 (14.23)	7.11 (15.33)	7.99 (14.78)	22.40
T-4	Fipronil 0.3GR	50	6.30 (15.62)	4.66 (12.24)	5.48 (13.93)	25.22
T-5	Chlorantraniliprole 0.4GR	40	4.79 (12.72)	4.14 (11.63)	4.46 (12.17)	26.46
T-6	Clothiniadin 50WDG	125	5.34 (13.63)	4.55 (12.26)	4.94 (12.94)	25.93
T-7	Control	-	10.50 (16.54)	8.74 (17.17)	9.62 (16.85)	18.02
	SE±		1.22	0.79	1.00	0.72
	C D (p=0.05)		3.84	2.32	3.08	2.27
	C.V %		14.51	12.81	13.66	

* Figures in parentheses angular transformed values

of chlorantraniliprole and fipronil at planting recorded least early shoot borer infestation in sugarcane as compared to other treatments. The maximum yield of soybean was recorded in chlorantraniliprole (26.46 q/ ha) followed by clothianidin (25.93 q/ ha), fipronil (25.22 q/ ha) and thiamethoxam (23.42 q/ ha). Dhurgude (2010) revealed that the maximum yield was found in thiamethoxam (22q/ ha) followed by phorate (19 q/ ha).

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