Field Evaluation of Newer Insecticides Against Insect Pests of Rice

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Among the insect pests attacking rice crop, the yellow stem borer (YSB) (*Scirpophaga incertulas* Walker) is the most predominant causing serious damage in rice Growing tracts of India, Bangladesh and South East Asian countries (Islam, 1996). It damages the rice plants from seedling to maturity, in all ecosystems including boro rice (Misra *et al.*, 2005). Rice gundhi bug is another important pest (Rao and prakash,1995) causing yield losses ranging from 10-40% in Eastern India (Rao and Kulshrestha, 1985). The present investigation aimed at generating information on efficacy of newer insecticides against these two pests in rice.

Field trials were conducted during dry seasons of 2010 and 2011 at the farm of Central Rice Research Institute, Cuttack. The trial was laid out in randomized block design with three replications. Two seedlings per hill of variety jaya were transplanted at a spacing of 20 x 15 cm. Individual plots (5 x 4 m) were separated by bunds and channels to regulate water flow and prevent water movement from one plot to other. The recommended package of practices were adopted for intercultural and other operations. Eight insecticide treatments *viz.*,flubendiamide + buprofezin 4+20 % @ 875 ml/ha, flubendiamide 20% @ 175ml/ha, buprofezin 25% @700ml/ha, acephate 95 % @ 592 ml/ha, dinotefuron 20% @ 200ml/ha, dinotefuron 20% @ 150 ml/ha, acephate 75%@ 800 ml/ha, with monocrotophos 36% @1390ml/ha were applied using 500 lit. of spray fluid /ha for uniform distribution in the field against insect pests of rice at 45 days after transplanting. Observations on stem borer damage at vegetative stage were recorded after 3 days of treatment. Pre harvest observation on stem borer damage were recorded by counting the panicle bearing tillers and number of white ears. Gundhi bug damage was calculated by counting total number of grains to infested grains in the five sampled panicles in each plot. Grain yield data were recorded from each plot. The data after suitable transformations, were subjected to statistical analysis.

The combination product, flubendiamide + buprofezin treatment recording lowest dead hearts (3.73 and 3.46 %) (DH) as well as white ears (3.23 and 3.2 % WE), was the best treatment against stem borer (Table 1). However, the check insecticide, monocrotophos was at par with combination product against yellow stem borer (YSB) at vegetative stage during both years, while the efficacy of combination product at heading stage superior to that of

Table1. Field evaluation of new insecticides against insect pests of rice during rabi-2010

Tr. No	Treatment	% a.i	Dose g/ha	% DH	% WEH	%Gundhi bug damage	Yield t/ha
1	Flubendiamide+Buprofezin	4+20	875	3.73(11.13)	3.23(10.35)	10.26(18.67)	4.5
2	Monocrotophos	36	1390	4.1(11.66)	4.1(11.65)	11.83(20.11)	4.2
3	Acephate	95	592	4.73(12.55)	4.43(12.14)	12.66(20.84)	4.11
4	Flubendiamide	20	175	4.93(12.82)	4.8(12.42)	12.53(20.71)	3.98
5	Dinotefuron	20	200	5.0(12.89)	4.83(12.68)	13.76(21.73)	3.9
6	Dinotefuron	20	150	5.86(13.98)	5.43(13.45)	14.53(22.4)	3.88
7	Buprofezin	25	700	6.0(14.17)	5.36(13.36)	14.7(22.52)	3.6
8	Acephate	75	800	6.13(14.31)	5.43(13.45)	14.73(22.56)	3.38
9	Control	water	-	9.23(17.68)	9.22(17.67)	21.16(27.37)	2.66
	CD at 5%			1.1	0.99	1.74	0.71

Data in the parenthesis are angular transformed values

Table 2. Field evaluation of new insecticides against insect pests of rice during rabi-2011

Tr. No	Treatment	% a.i	Dose g/ha	% DH	% WEH	%Gundhi bug damage	Yield t/ha
1	Flubendiamide+Buprofezin	4+20	875	3.46(10.72)	3.2(10.3)	10.36(18.74)	4.8
2	Monocrotophos	36	1390	4.16(11.77)	4.4(12.1)	10.66(19.00)	4.4
3	Acephate	95	592	4.53(12.27)	4.66(12.47)	11.33(19.66)	4.3
4	Flubendiamide	20	175	4.83(12.67)	4.76(12.57)	11.56(19.85)	4.2
5	Dinotefuron	20	200	5.0(12.88)	4.8(12.64)	11.93(20.17)	4.11
6	Dinotefuron	20	150	5.2(13.16)	5.56(13.65)	11.93(20.17)	3.7
7	Buprofezin	25	700	5.36(13.36)	5.6(13.67)	16.16(23.70)	3.65
8	Acephate	75	800	5.56(13.64)	5.6(13.68)	18.76(25.63)	3.55
9	Control	water	-	8.83(17.28)	7.8(16.21)	22.60(28.37)	2.9
	CD at 5%			1.05	1.21	2.23	0.62

Data in the parenthesis are angular transformed values

other treatments. All the treatments were superior to control showing 9.23 and 8.83 % DH and 9.22 and 7.8 % WE, respectively during 2010 and 2011(Table 2). Grain damage due to gundhi bug varied from 10.26 to 14.73 % during 2010 and 10.36 to 18.76 % during 2011 in insecticide treatments compared to 21.16 and 22.6 %, respectively in control. The combination product was the best treatment at par with monocrotophos and acephate in both years. However during rabi 2011, flubendiamide and dinotefuron at both doses were also at par. These treatments were superior to other insecticides. The combination product yielded the highest of 4.5 and 4.8 t/ha, followed by monocrotophos (4.2 and 4.4 t/ha) and acephate (4.11 and 4.3 t/ha), respectively during 2010and 2011. The results of the present study conform to the findings of Rath *et al.*, (2010) who described that most of the new insecticides were effective in controlling the stem borer incidence.

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