



Evaluation of Different Eco-Friendly Techniques for Minimizing Yellow Stem Borer *Scirpophaga Incertulas* Wlk. of Rice

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Abstract— Pheromone installed treatment proved best among all the treatments to reduced dead hearts percentage, white ears head percentage and recorded more yield. Untreated control treatment showed significantly the highest infestation percent among all the treatments. pheromone installed field exhibited minimum white ear head 19.28 per cent as compared to other techniques employed like dead heart removal, egg mass removal/ bird perching which received 27.68 to 42.03 per cent White ear head. Maximum grain yield of 38.25q/ha was recorded in the pheromone installed field in comparison to control 26.16 q/ha.

Keywords — Pheromone trap, Rice, Dead Head Removal, Egg Mass Removal, Management.

I. INTRODUCTION

Rice the important stable food of India, is affected by number of insect pests during its different growth stage. In India, approximately 100 insect species feed on rice and 20 of these are considered to be major pests, causing 30% yield loss. Among these, the yellow stem borer (YSB), *Scirpophaga incertulas* (Wlk.) is the major damaging stem borer species and considered as serious pest of rice. It is a major constraint, responsible for low production of rice yield in almost the rice ecosystems, which caused 3-95% yield losses in India (Senapati and Panda, 1999). A number of chemicals like triazophos, monocrotophos, chloropyriphos, cartap hydrochloride, fipronil or phorate 10 G etc have been used indiscriminately against rice pests. The misuse and abuse during the last few decades caused wide spread damage to the environment and human health. In these circumstances, there is a growing need to promote eco -friendly methods against this pest. Keeping this in view, the present work was conducted in the Research Cum Instructional Farm College of Agriculture, Raipur (C.G) with an aim to evaluate the performance of different eco-friendly techniques against rice stem borer (*S. incertulas*).

II. MATERIALS AND METHODS

The experiment was conducted in the Research Cum Instructional Farm College of Agriculture, Raipur (C.G) during 2013 to evaluate the effectiveness of different eco-friendly techniques for the minimizing of yellow stem borers. The results were compared with untreated control. Four

different plots were used for four different treatments. The trial was replicated in the field of five.

The treatments were T1: Installed pheromone trap (8 trap) T2: Dead hearts removal; T3: Egg masses removal/ bird perching bamboo stick and T4: Untreated control. The observations were recorded by following standard method for stem borer (Anon., 2007). The per cent infestation was calculated by counting the number of dead hearts/white ears and total number of tiller/panicle from 10 randomly selected plants. The per cent incidence dead hearts/white ears was calculated as follows.

$$\text{Percent incidence} = \frac{\text{Number of dead hearts/white ears}}{\text{Total number of tillers/panicles}} \times 100$$

III. RESULTS AND DISCUSSION

The stem borer incidence (per cent dead hearts & per cent white ear heads) was recorded at 30 DAT, 45 DAT, 60 DAT and 120 DAT from the experiment. Different eco-friendly techniques for minimizing YSB *Scirpophaga incertulas* Walker were recorded during *khari* 2013 and presented in table no. 1. Among the treatments, pheromone installed treatment was significantly minimizing the YSB infestation after installation of trap. The mean % dead hearts under pheromone installed plot was observed as 20.40 to 20.39 % respectively followed by dead hearts removal treatment 20.82 to 23.57 % respectively, and egg mass removal /bird perching bamboo stick block 30.78 to 31.20 % respectively. The mean % white ear heads at 120 DAT pheromone installed was observed 19.38 % followed by dead hearts 27.68 and egg masses removal 36.91 treatments. Among the treatment dead hearts and egg masses removal/bird perching treatment was ranked 2nd and 3rd best treatments respectively in minimizing the YSB infestations (DH/WEH) .These studies are supported by the earlier finding of Katti *et al.* (2001) and Sarao *et al.* (2011) reported that IPM module involving installation of pheromone traps @ 20/ha significantly reduced the YSB infestation and also increased the grain yield.

IV. CONCLUSION

The results of the trial indicated that among different eco-friendly techniques, evaluated against yellow stem borer



incidence, pheromone installed technique exhibited minimum YSB incidence of 20.39-20.40 per cent dead heart and 19.28 per cent white ear head with maximum grain yield 36.25 qha⁻¹ than other techniques.

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Table: - 1. Performance of different eco- friendly techniques against yellow stem borer incidence.

S. No.	Treatments	Percent Damage by Yellow stem Borer				Yield q/ha
		Pre (%DH) 30DAT	7 DAI (%DH) 45DAT	15 DAI (%DH) 60DAT	% WEH before Harvest 120DAT	
T ₁	Pheromone trap	1.39 (6.71)	20.404 (26.840)	20.396 (26.835)	19.38 (30.606)	38.25
T ₂	Dead hearts removal	2.85 (8.713)	21.82 (27.829)	23.572 (29.030)	27.682 (31.731)	34.25
T ₃	Egg mass removal	2.066 (6.412)	30.78 (33.683)	31.206 (33.945)	36.91 (37.398)	35.75
T ₄	Untreated control	3.61 (10.946)	37.882 (37.97)	41.23 (39.927)	42.032 (40.398)	26.16
	SEm±	1.81	0.20	0.30	0.16	0.43
	CD (5%)	NS	0.630	0.953	0.517	1.34

Figure in parentheses are arc sine transformation values
DAT = Day after transplanting, DH= Dead heart, WEH = White ear head.

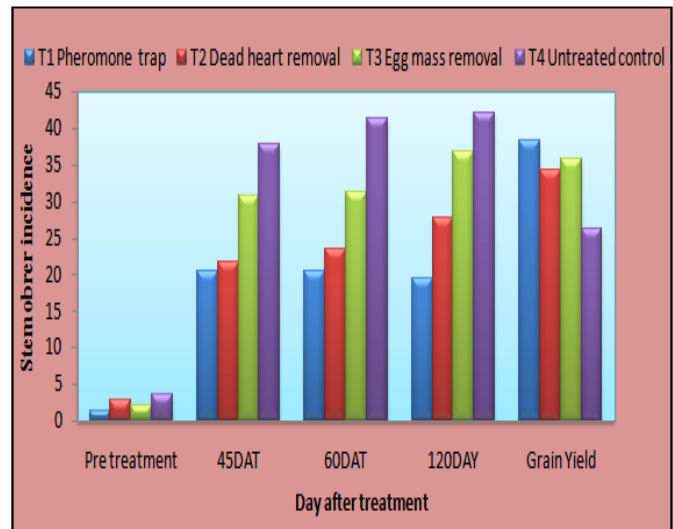


Fig 4.1: Performance of different techniques against yellow stem borer incidence