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The Effect of Manuring and Spacing on the Stem Borer (*Schoenobius incertellus* Walker) attack in Hybrid Rice*

by

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Manuring and spacing (population per unit area) were believed to have some bearing on the incidence of crop pest. Vigorous growth of the rice plant, as a result of adequate manuring and proper spacing influences the resistance of plant to the infestation of crop pest. The effect of these two agronomic practices was studied for the attack of rice stem borer (*Schoenobius incertellus* Wlk.) on a *Japonica* x *Indica* rice H. R. 104 in comparison to a local *Indica* rice H. R. 5. The hybrid variety is of recent origion and information on these aspects was scanty. Narayanan (1953) observed that the severity of the attack can be reduced by keeping the field bunds clean free of grasses. Khan and Murthy (1955) reported varietal susceptibility to the rice stem borer with heavy egg laying by the moth and attack to the stem by the Caterpillars. Cultivation of such varieties could be avoided to minimise the losses in yield. Rao *et al.* (1956) stated that no variety under trial was completely immune but varied in degree of susceptibility to stem boner. Experiments conducted at the Central Rice Research Institute, Cuttack (1954—'55) indicated that rice crop had shown a significantly greater number of white ears in plots with high nitrogen levels compared to unmanured plots. Ahmed and Rao (1965) observed that cultural practices of spacing and seedling rate did not influence the attack of stem borer nor there was an interaction between the two practices.

Material and Methods: The experiment was conducted at the Agricultural College Farm, Osmania University, during the *Rabi* (December 1958 to May 1959) season. It was laid out in split plot design with varieties as main and the levels of fertilizers and spacings as sub-treatments as given in table 1. The treatments were replicated six times with randomized allocation of treatments in plots of size 16' × 13'.

The crop was grown under irrigated condition. Ammonium sulphate was applied in two equal split doses, one at final puddling of field and the other thirty days after transplanting. Super phosphate was applied in a single dose at final puddling. A basal dressing of F. Y. M. at four tons

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per acre was also applied to all treatments including control. The number of white ears was recorded after the dough stage of the crop for all the treatments. The experimental data were analysed statistically.

Results: The experimental data are given in the following table.

TABLE 1

Number of White ears for varying treatments

Treatment	No. of hills per plot	H.R. 104			H.R. 5		
		Average no. of earbearing tillers per hill	Average no. of white ears per plot	Percentage of white ears per 100 ear-bearing tillers	Average no. of earbearing tillers per hill	Average no. of White ears per plot	Percentage of white ears per 100 earbear ing tillers
Fertilizer Level:							
(1) $30N+15P_2O_5$	5408	5·4	83·6	0·875	4·6	209·2	0·897
(2) $60N+30P_2O_5$	5408	6·3	99·3	0·291	5·3	194·7	0·679
Spacing:							
T_1 (6"x4")	1248	5·3	101·8	1·539	4·2	205·8	3·927
T_2 (6"x6")	832	6·7	87·7	1·576	5·6	203·4	4·366
T_3 (6"x8")	624	8·5	85·3	1·602	6·4	196·7	4·927

The analysis of data revealed that the difference between *Japonica* x *Indica* hybrid and *Indica* rice (with regard to susceptibility to stem borer) was highly significant as shown in table 2. Hybrid H.R. 104 showed significantly lesser incidence of stem borer than the local rice H.R. 5. Further analysis of the data revealed that neither the levels of fertilization nor spacing could significantly influence the incidence of stem borer in both the varieties. There was also no significant differences in the interaction between fertilizer level and spacing.

TABLE 2

Variety x Fertilizer Level

No. of white ears (total of 18 plots in six replications)

Variety	Fertilizer Level		Varietal mean	S.E.D.	C.D. (P = 0·05)
	30N+15P	60N+30P			
(1) H. R. 104	1506	1789	91·52	± 8·3	16·28
(2) H. R. 5	3767	3505	202·0	"F" test significant	
Fertilizer Level mean	146·47	147·05			
S. E. D.	± 1725·45 ("F" test not significant)				

Discussions: The experimental data revealed that except for the varietal difference the fertilizer levels and spacings could not influence the incidence of stem borer. The hybrid rice variety H.R. 104 showed a very high degree of resistance to the insect pest and it is likely that the *japonica* parent might have induced the resistance. Though there was no significant interaction between varieties and fertilizer levels, the hybrid had greater number of white ears at higher doze of fertilization (Table 2).

Conclusions: The *Japonica* x *Indiba* hybrid rice H. R. 104 showed greater degree of resistance to rice stem borer than a local *Indica* rice H, R. 5. Neither the fertilization level nor spacing could influence the incidence of stem borer. The findings, therefore, suggested that *Japonica* x *Indica* hybrid rice may be grown to minimize the losses in yield due to stem borer attack.

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