https://doi.org/10.29321/MAJ.10.A03847

The Influence of Cultural Practices on the Stem Borer (*Schoenobius incertellus* Walker) attack in Rice*

by

Md. KHURSHEED AHMED[1] and R. SURYANARAYANA RAO[2]

Synopsis: The two cultural practices of spacing and seedling rate did not influence the attack of stem borer significantly. The interaction between these two treatments was also not statistically significant.

The plant population per unit area was believed to have some bearing for the incidence of crop pest. The cultural practices under study, the spacing and seedling rate planted per hill directly govern the stand and population count per unit area. The influence of these two cultural practices was studied for the attack of stem borer (*Schoenobius incertellus*) in hybrid rice between two geographical rice races of JAPONICA and INDICA as the literature was very scanty on this aspect. Ayyar and Anantanarayan (1937) observed that the severity of the stem borer attack was influenced by microclimatic conditions. The moths prefered fields with standing water more than dry fields, with the result the pest incidence was higher in low-lying and ill-drained fields. Rao (1930) recorded that in the first season early varieties escaped the attack compared with the mid or late varieties. Ghose *et al* (1960) pointed out that adjustments of cultural operations and planting of rice just to escape pest infestation were not easily practicable. Experiments at Central Rice Research Institute, Cuttack (Central Rice Research Institute Annual Report 1954—'55), indicated that high nitrogen levels gave significantly more white earheads (empty earheads) than no manure or phosphatic manure plots.

Materials and methods: The experiment was conducted at the Agricultural College Farm, Osmania University, Hydrabad, during the ABI season (June to October) 1959. It was laid out in split plot design wherein each treatment was replicated six times. The spacing and seedling rate shown in table 1 were taken as main and sub plot treatments. The net plot size of the main plot treatment was 10'x18' or 1/242th of an acre.

The crop was raised by transplanting under puddled condition. The field was fertilised with a normal dose of 45 pounds of nitrogen and $22\frac{1}{2}$ pounds of P_2O_5 per acre in addition to six tons of well decomposed compost

---

* Formed a part of the thesis of the senior author for the award of M. Sc. (Ag.) degree of the Osmania University, Hydrabad in 1961.

[1] Lecturer in Agronomy, [2] Head of the Department of Agronomy and Horticulture, Osmania University, Hydrabad.

Received on 22—7—1964.

per acre. The number of empty earheads were recorded from each of the sub treatments after the dough stage of the crop. The data was analysed statistically.

Results and Discussion: The data collected is given in Table 1 in the form of two way interaction.

The analysis of data indicated that neither the spacing nor seedling rate planted per hill under study influenced the attack of stem borer significantly. The interaction between the spacing and seedling rate planted per hill was also not significant in this experiment.

TABLE 1

Number of empty earheads per plot (each figure is a total of six replications)

Spacing	Seedling rate planted per hill			Total	Spacing mean
	1 Seedling	2 Seedlings	3 Seedlings		
T1 (4" x 4")	1721	2039	1756	5516	306·4
T2 (4" x 6")	2273	2013	2052	6338	352·1
T3 (4" x 8")	1946	2113	1983	6042	335·6
T4 (6" x 6")	1729	2247	1819	5795	321·9
T5 (6" x 8")	1623	1740	1766	5129	284·9
T6 (8" x 8")	1847	1943	1425	5215	289·7
Total	11139	12095	10801	34035	
Seedling rate mean	309·4	335·9	300.0		

TABLE 2

Number of empty earheads for the varying spacing treatments

Spacing	No. of hills per plot	Average No. of earbearing tillers per hill	Average No. of empty earheads per plot	Per cent of empty earheads per 100 earbearing tillers
T1 (4" x 4")	1620	3·26	306·4	5·80
T2 (4" x 6")	1080	3·48	352·1	9·36
T3 (4" x 8")	810	4·13	335·6	10·03
T4 (6" x 6")	720	4·11	321·9	10·87
T5 (6" x 8")	540	4·25	284·9	12·41
T6 (8" x 8")	405	5·01	289·7	14·27

TABLE 3

Number of empty earheads for the varying seedling rate treatments.

Seedlings planted per hill	Average No. of seedlings per plot	Average No. of earbearing tillers per seedling rate	Average No. of empty earheads per plot	Per cent of empty earheads per 100 ear-bearing tillers
(A) One	287·5	3·75	309·4	28·69
(B) Two	575·0	3·88	355·9	15·95
(C) Three	862·5	4·48	300·0	7·76

The data was further processed to see the extent of the stem borer damage. The number of empty earheads for spacing and seedling rate treatments in relation to earbearing tillers was calculated and given in tables 2 and 3 respectively.

The data revealed that although, the two cultural practices under study did not influence the stem borer attack significantly, the closer spacing and higher seedling rates recorded a higher number of empty earheads in general. But when the empty earheads were considered in relation to earbearing tillers, the closer spacings and higher seedling rates recorded comparatively lower number of empty earheads than wider spacings and lower seedling rates. This is because of the fact that the influence of increased plant population by closer spacing and higher seedling rate was more pronounced for production of earbearing tillers than the increased activity of the borer in closer spacing and higher seedling rate treatments.

Conclusion: The increased seedling rates and closer spacing produced less number of empty earheads per 100 earbearing tillers. The results therefore suggested that when there is a risk of stem borer attack higher seedling rate and closer spacing (without affecting the yield) may be adopted.

REFERENCES

Ayyar, T. V. R. and K. P. Anantanarayan — 1937 The stem borer pest of rice *(Schoenobius incertellus)* in South India *Agric. Live Stock in India* 7 (ii): 171–79.

Ghose, R. L. M., M. B. Ghatge and V. Subrahmanyan — 1960 *Rice in India* Indian Council of Agricultural Research. New Delhi.

Rao Tirumala, V. — 1930 A general study of fluctuation in insect damage. *Madras Agric. J.* XIX (6) 248–49.