https://doi.org/10.29321/MAJ.10.A02501

Madras Agric. J. 71 (7) 464—466 July 1984.

INTEGRATED CONTROL OF THE RICE GALL MIDGE, ORSEOLIA ORYZAE (W. -M.)

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The integrated control of the rice gall midge, *Orseolia oryzae* (W-M.) revealed that the transplanting of rice before July, 15 and the crop fertilized with 100: 50: 50 kg/ha of N, P_2O_5 and K_2O was the best under Sambalpur agroclimatic conditions. This supplemented by insecticidal protection consisting of seedling root dip (SD) in 0.02% isofenphos with 1% urea for 3hr, followed by implanting phorate mud balls @ 0.75 kg a. i./ha at 25 days after transplanting (DAT) was effective and economical for a gall midge susceptible variety *Jaya*. On the other hand: the resistant *Shakti* without insecticidal protection gave parallel yields.

The rice gall midge, *Orseolia oryzea* is a serious pest of wet season rice in many parts of India (Jayaraj *et al.* 1976, Jena *et al.* 1982 and Samalo *et al.* 1983). Noteworthy progress has been achieved in single line control tactics but unfortunately such measures have not proved fully satisfactory and little attempt has been made to utilise and integrate the available scientific knowledge in formulating a workable integrated control schedule (Heinrichs *et al.* 1978). The authors rightly pointed out that for a number of reasons it was urgent that the rice insect pest management system development and implementation be acclerated. Kiritani, (1979) strongly suggested that cultural practices should be the nucleus in implementing the pest management system for rice stem borers.

Very little is known on the integrated control of rice gall midge to be adopted under western Orissa conditions. Hence the present study was taken up where the promising cultural (Planting time and fertilizer dose) and chemical control schedules were suitably integrated and tested at the Regional Research Station, Chiplima (Sambalpur), an endemic gall midge spot.

MATERIALS AND METHODS

Nucleus seeds of *Jaya* and *Shakti* were sown in raised nursery beds on June 10, 1979 for the first year trial and on June 12,1980 for the second year trial. Transplantings were done on July 5,1979 and July 7,1980 respectively. Wherever necessary seedling root dip in 0.02% isofenphos (Oftanol 50 EC) with 1% urea for 3 hrs was done before transplanting. Granular phorate (Thimet 10 G) was broadcasted @ 1 kg a. i./ha/application. Mud balls of the same granules were prepared (approximately 2 cm diameter) in which small quantities of the insecticide were embeded (@0.75 kg a. i./ha). These balls were implanted in the rice plot in between the rows @ 1 ball/

Part of the Ph. D. Thesis submitted by the senior auther to the Orissa University of Agriculture & Technology, Bhubaneswar.

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Table : Integrated control of the rice gall midge

Tretment	Silver shoot [%]* at 50 DAT 1979	1980	Grain yield [t/ha]* 1979	1980	Cost of produce [Rs/ha]	Cost of cultivation Rs/ha]	Cost of plant protection [Rs/ha]	Net Profit [Rs/ha]
Maximum protection**	4.67 (12.10)	5.44 (13.41)	4.91	4.52	5181	1200	1003	2978
SD + Phorate G at 25 DAT (broadcasting)	6.87 (15.05)	7.97 (16.02)	3.91	3.86	4312	1200	283	2829
SD + Phorate G mud-ball at 25 DAT	8.54 (16.97)	11.52 (19.82)	4.43	4.24	4763	1200	360	3203
Phorate G broadcasting at 20 & 45 DAT	11.41 (19.64)	7.57 (15.55)	4.08	4.15	4532	1200	506	2826
Quinalphos spray at 15, 30 and 45 DAT	32.83 (34.94)	45.95 (41.99)	2.88	2.00	2684	1200	460	1024
Untreated *Jaya*	41.98 (40.37)	63.22 (52.67)	1.68	0.85	1397	1200	—	197
Untreated resistant check, *Shakti*	2.34 (8.72)	4.33 (12.00)	4.36	4.07	4642	1200	—	3442
SE (m)±	1.38	1.80	0.17	0.16	—	—	—	—
C. D. (P=0.05)	4.25	5.33	0.53	0.49	—	—	—	—

* Mean of three replications.

** Comprising of : SD in 0.02% isofenphos with 1% urea for 3 hr Phorate G broadcasting at 20, 40, 60 DAT and Quinalphos spray at 85 DAT.

SD= Seedling root dip

Economics calculated on the average yield of 2 years

Each broadcasting = Phorate G @ 1 kg a.i./ha

Mud bali = 0.75 kg a. i./ha

4 hills at a depth of about 2.5 cm. Quinalphos (Ekalux 25 EC) was sprayed thrice @0 5 kg a,i./ha at 15 days interval starting from 15 DAT.

The maximum protection treatment comprised of seedling root dip followed by three round application of phorate granules (at 20, 40 and 60 DAT) and quinalphos spray at 85 DAT.

RESULTS AND DISCUSSION

The gall midge infestation, and the grain yield showed a consistant trend in both the test seasons. The maximum protection treatment given to *Jaya* was the best both from low gall midge incidence (4.60 to 5.44% silver shoot) and higher grain yield (Table). However SD treatment followed by implanting phorate G @ 0.75 kg a. i./ha or broadcasting of the same granules @ 1 kg a. i./ha. were equally effective. The average silver shoot incidence in these treatments was less than 10% as against 41.98% or more in the untreated control. In the absence of SD treatment phorate G broadcast at 20 and 40 DAT

was equally effective. For controlling the midge pest, mephosfolan (Cytrolane 5 G) mud balls have been suggested by Kalode (1976) and Kulshreshtha (1978) while two round water surface application of Phorate G was suggested by Jayaraj *et. al.* (1976).

Foliar spray with quinalphos thrice @ 0 5 kg a. i./ha at 15, 30 and 45 DAT could not give adequate protection against the midge pest. However, such treatment was significantly superior to the crop left unprotected.

A careful analysis of the control schedule indicates that the maximum protection treatment though effective required repeated application of insecticides which goes against the norms of pest management. In a country like Inidia where rice cultivation is done under little technical knowhow and meagre capital investment the maximum protection treatment may not be accepted by ordinary cultivators. On the other hand mud ball preparation and implantation in the vicinity of rice roots is a cumbersome process and unless simpler techniques are developed it may not be practiced by the cultivators. Therefore, the combined treatment of SD and one round broadcasting of phorate G appeared to be acceptable and at the same time economical also. Foliar spray though inferior to granular treatments is the only resort where water control is a problem.

Depending upon the plant protection schedule the net benefit derived was maximum form tne mud ball treatment as against Rs. 197/- only from the untreated control. Phorate G applied in any from was remunerative. The present study brought out several chemical control schedules for maximizing yield (Table). It is upto to the choice of the farmer to accept the one that suits his purse. The studies further brought out the fact that growing a midge resistant variety like *Shakti* is the best to avoid the midge pest. It needed no investment towads insecticides and at the same time gave an extra yield amounting to Rs. 3442/- per ha.

The authors are grateful to Dr. J. M. Satpathy, Dean of Research and Dr. N. Panda, Professor and Head of Entomology, Orissa University of Agriculture and Technology for their valuable suggestions.

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