

Studies on the Insecticidal Control of Rice Gallmidge *Pachytiplosis oryzae* W.

by

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The rice gallmidge *Pachytiplosis oryzae* W., is one of the serious pests of rice crop in many parts of India and other rice growing countries namely Burma, Ceylon, China, Thailand, Vietnam, etc. The tiny maggots of this mosquito like fly, feed around the base of the growth cone of the terminal or axillary shoot apices and thus result in the formation of the characteristic tubular galls called "silver shoot". The chemical control of the pest has been attempted by several workers in India and abroad. Patel and Bhat (1954) found parathion and chlordane to be useful in reducing the infestation of gallmidge. Israel (1956) reported that four rounds of sprays of 0.08% parathion or 0.04% endrin to be effective in controlling the pest. The application of mineral oil saturated with dieldrin, chlordane as well as the use of 5% pellets of dieldrin had also been reported to give better results for control of the gallmidge (Patel *et al.*, 1957). Krishnamoorthy Rao *et al.*, (1960) found 0.1% Rogor and 0.02 or 0.04% Endrin to be promising for controlling the gallmidge. Ow and Kanjanaoon (1961) reported that the application of malathion and cuprovit to the plots increased rice yield, mainly by the reduction of gallmidge incidence in the crop. In the present investigations carried out at the Regional Agricultural Research Station, Aduthurai the efficacy of some of the modern insecticides were tested for control of the pest. The results of the studies are presented in this paper.

Materials and Methods: Two insecticidal trials were laid out during 1968-69 and 1969-70, in a randomised block design, with ten treatments replicated four times. The sizes of the experimental plots were 20'×12' and 20'×15' respectively during 68-69 and 69-70. A medium duration susceptible variety, CO 30 was planted in the experimental plots with a spacing of 8"×6".

In both the years, the same set of treatments viz., sprays of BHC 0.1% DDT 0.2%, Endrin 0.04%, Parathion 0.05%, Thiometon 0.025%, Carbaryl 0.1%, Methyl demeton 0.025%, the granular applications of Diazinon and Lindane @ 1.25 kg ai/ha were compared with untreated control. The first round of insecticidal application was made soon after noticing the incidence of galls in the experimental crop and the insecticidal treatments were repeated at triweekly intervals, restricting the total number of rounds to three. Before

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each insecticidal application and prior to harvest of the crop, counts of the total tillers and the number of 'silver-shoots' were recorded in four random units of 0.45×0.45 m from each plot. From the total of the four units the percentages of affected tillers in each plot were calculated.

The height of the plants, total and the number of productive tillers were also recorded in sampling units from each plot during 1968-69. The experimental plots were harvested after leaving two guard rows on all sides of each plot and the produce dried till constant weight was obtained. The data gathered on the infestation, yield etc. were analysed statistically and interpreted.

Results and Discussion: During both the years of the studies, the experimental crop was planted during September-October and the galls were first noticed in the crop in about a fortnight after the transplanting. The infestation rapidly increased and the maximum percentages of galls were noted in the crop in about 45 to 60 days after planting.

During the year 1968-69, gallmidge infestation was severe in the experimental crop, the percentage affected tillers being 42.8% in the untreated control plots. The infestation was also high in the plots under various insecticidal treatments except the plots that received Diazinon granules. On account of this, normal stand of the crop was able to be seen only in the diazinon treated plots (Photo 1) whereas in other cases the plants were stunted with profuse side tillers which also often got transformed into pink coloured galls. The height measurements recorded on the 50th day after planting also corroborated this, as the mean heights were 104.2, 85.5 to 90.1 and 83.7 cm respectively in the plots under Diazinon, other insecticides and the untreated control. So also the percentages of productive tillers were high in the Diazinon treatment namely 87.8% as against 26.6 to 44.6 in the remaining insecticidal treatments and 30% in the untreated control. At the time of peak incidence of the pest, the percentages of galls recorded in the plots were 7.9, 30.8 to 37.8 and 42.8 respectively in the treatments with Diazinon, other insecticides and the untreated control. As a result of this, the Diazinon treated plots gave 68% increase in yield over the control.

Similar trend in infestation, growth of the plants and the yield were observed when the experiment was repeated during the year 1969-70, though the level of infestation was not as high as in 1968-69. The infestation was reduced over 18.9% by the application of diazinon granule and thus resulted in the increase of 36% grain yield over the control.

The results of the analysis of the infestation and yield data from the two experiments are presented in table 1. It could be seen from the data that during both the years the application of Diazinon granule is significantly

TABLE 1. Gallmidge infestation and grain yield

S. No.	Treatments	1968-69				1969-70			
		Mean percentage of infestation by gallfly	Mean transformed value for the percentage	Mean height of plant in cm	Mean percentage productive tillers	Mean percentage of infestation by gallfly	Mean transformed value for the percentage	Mean yield per plot in kg	Mean yield per plot in kg
1.	BHC 50% wp 0.1%	37.8	37.95	89.0	33.3	22.4	28.26	5.78	5.78
2.	DDT 50% wp 0.2%	32.3	34.26	87.7	31.2	21.9	27.84	6.28	6.28
3.	Endrin 20% EC 0.04%	34.2	35.78	85.5	38.6	20.2	26.68	6.18	6.18
4.	Ethyl parathion 50% EC 0.05%	30.8	33.68	90.3	44.6	21.9	27.84	6.33	6.33
5.	Thiometon 25% EC 0.025%	37.8	37.71	88.1	30.9	22.8	28.52	5.80	5.80
6.	Carbaryl 50% wp 0.1%	34.5	36.18	88.8	26.6	23.8	29.15	6.10	6.10
7.	Methyl demeton 25% EC 0.025%	36.8	37.28	90.1	30.5	25.1	30.04	5.95	5.95
8.	Diazinon granule 1.25% kg ai/ha	7.9	16.05	104.2	87.8	9.2	17.64	7.35	7.35
9.	Lindane granule 1.25 kg ai/ha	35.6	36.53	89.9	42.5	21.4	27.51	6.30	6.30
10.	Control	42.8	40.86	83.7	30.0	28.1	31.99	5.40	5.40

Conclusions : a) 1968-69 Infestation : 8 4 2 3 6 9 7 5 1 10
 b) Productive tillers : 8 4 9 3 1 10 5 2 7 6
 c) Grain yield : 8 9 4 3 2 5 1 7 6 10
 d) 1969-70 Infestation : 8 3 9 4 2 1 5 6 7 10
 e) Grain yield : 8 4 9 2 3 6 7 5 1 10

superior to other insecticides tried, for control of gallmidge and increasing the rice yield.

Summary and Conclusion: Two trials using synthetic insecticides including granular formulations were carried out at the Regional Agricultural Research Station, Aduthurai during 1968-69 and 1969-70 with a view to find out an effective control of the rice gallmidge *Pachydiplosis oryzae* W. The insecticidal sprays of BHC 0.1%, DDT 0.2%, Endrin 0.04%, Parathion 0.05, Thiometon 0.025%, Carbaryl 0.1% Methyl demeton 0.025% and the granular application of Diazinon, Lindane @ 1.25 Kg ai/ha were compared with untreated control in both the trials. Under severe infestation of 28 to 43%, the application of Diazinon granule thrice @ 1.25 Kg ai/ha at triweekly intervals was found to be very effective for control of the pest and increasing the grain yield.

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Role of National Demonstrations in Agricultural Technology

by

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Introduction: The important role of both the investigator and the interpreter, in any programme of agricultural development, needs no emphasis. Even if the investigator does his job with thoroughness and perfection, unless these findings are interpreted and conveyed to the farmer, it will only amount to stagnation of his findings. It is also essential that such research findings and improved techniques, be conveyed in a form acceptable to the farmer, if it

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