

RESEARCH NOTES

Field Evaluation of *Trichogramma japonicum* Ashmead Against Rice Stem Borer *Scirpophaga incertulas* Walker

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The rice crop is affected by seven tissue borers in India and most important and widely distributed one is the yellow stem borer *Scirpophaga incertulas* Walker (Banerjee, 1964; Atwal, 1986). The control of this borer by chemicals is difficult as the larva enters into the plant tissue soon after hatching and the entire larval and pupal period is spent within the stem. Some encouraging results to control this borer with chemicals have been achieved (Banerjee, 1964). But keeping in view the harmful effect of indiscriminate use of insecticides and specially their role in eliminating the beneficial fauna, the emphasis is shifting towards development and implementation of integrated pest management (IPM) approaches in controlling the insect pests. So the efficacy of *Trichogramma japonicum* Ashmead was studied under field conditions to control this pest.

Two plots of rice var. PR 108, each measuring 0.5 ha were selected at a distance of 0.5 km from each other at village Cheema (Distt. Jalandhar). In both the fields, transplanting was done in the first week of July, 1993. In one of the fields the releases of egg parasitoids, *T. japonicum* were made from 7th August upto 28th September, 1993 at 10 days interval @ 50,000 parasitoids per ha while the 2nd plot without releases was kept as control. Each plot

was divided into ten sub plots and in each about 2,500 parasitoids were released through eggs of *Corcyra cephalonica* (Stainton) parasitized by *T. japonicum*. The parasitized host eggs on card pieces (4" x 1") were stapled on the lower sides of leaves with the help of a stapler. The incidence of *S. incertulas* was observed in both the plots on 7th, 17th and 27th August, 1993 and 8th, 17th and 28th September, 1993. Observations were recorded from 5 randomly-selected hills from each such-plot.

Recovery tests were carried out by collecting the egg masses of *S. incertulas* from both the plots on above mentioned dates and months. The egg clusters collected on each date were brought to the laboratory and reared individually till the emergence of host larvae or parasitoids. One egg cluster was put in each homeopathic vial (2 dram) and plugged with surgical cotton wool. The parasitoid/host emerged per cluster were recorded and parasitism was worked out after identifying the parasitoid.

The results of the study showed that the cumulative incidence of *S. incertulas* varied from 1.9% to 5.5% from 7th August to 28th September in the plot where *T. japonicum* releases were made (Table 1). The correspon-

Table 1. Effect of *Trichogramma japonicum* on the incidence of *Scirpophaga incertulas* at Cheema

Treatment	* Mean % cumulative incidence of <i>S. incertulas</i>							
	August			Mean	September			Mean
	7	17	27		8	17	28	
<i>T. japonicum</i>	1.9	3.0	4.2	3.0	4.5	5.4	5.5	5.1
Control	1.7	15.4	18.0	11.7	18.2	18.9	20.6	19.2

* AV of 10 units and each of 5 hill.

Table 2. Recovery of *Trichogramma japonicum* and *Telenomus dignus*

DAT	No. of Egg clusters collected		No. of Egg clusters parasitized		% Parasitism by *			
	<i>T. japonicum</i> plot	Control plot	<i>T. japonicum</i> plot	Control plot	<i>Telenomus dignus</i>		<i>T. japonicum</i>	
					<i>T. japonicum</i> plot	Control plot	<i>T. japonicum</i> plot	Control plot
30	2	3	0	0	-	-	-	-
40	5	5	2	2	54.5(2)	52.5(2)	-	-
50	8	8	3	4	48.5(3)	47.6(4)	-	-
60	12	12	7	8	72.7(6)	80.0(8)	94.1(1)	-
70	14	15	8	9	79.5(6)	76.2(9)	67.9(2)	-
80	16	16	10	9	81.1(5)	77.0(9)	92.2(5)	-

* Figures in parentheses are number of egg clusters parasitized DAT (Days after transplanting).

ding figures for the control plot varied from 1.7% to 20.6%. This showed that the parasitoid played a role in checking the incidence of *S. incertulas* in the parasitoid-release plot only. *T. japonicum* was recovered only from the plot where releases were made and parasitism per cluster varied from 67.9 to 94.1 per cent (Table 2). The number of egg clusters parasitized by *T. japonicum* were 15%, 27% and 30% on 8.9.1993, 17.9.1993 and 28.9.1993, respectively. Another egg parasitoid *Telenomus dignus* Gahan was also recovered but its parasitism per cluster was almost equal in both the plots so its role was same in both plots.

T. japonicum was reported parasitizing egg masses of *S. incertulas* in Orissa (Misra, 1975) and West Bengal (Hikim, 1979). Arasumallah *et al.* (1984) reported that releases of *T. japonicum* along with *T. chilonis* Ishii and *T. exiquum* Pinto and Platner suppressed the incidence of paddy stem borer in Kerala but role of each was not determined.

KEY WORDS: *Trichogramma japonicum*,
Scirpophaga incertulas,
field evaluation

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