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INFLUENCE OF TIME OF PLANTING ON THE INCIDENCE OF RICE PESTS

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The population of green leafhopper (GLH) and brown planthopper (BPH) was maximum on crop planted during August 16 in kuruvai and samba seasons. During thaladi, the GLH population was high on crop planted during November 7. The leaf folder (LF) infestation was more in September planted crops in all the three seasons. Stem borer (SB) incidence was higher on crop planted during September 16 in thaladi season. Yield data and incidence/infestation of various pests indicated that the optimum plantings were August first week, October first week and October third week for kuruvai, samba and thaladi seasons respectively. A simple correlation worked out with field population and light trap catch revealed a positive relationship between them in case of GLH and BPH.

Large scale cultivation of high yielding rice varieties when grown under intensive plant protection, varied cultural practices and cropping patterns, pest problems got intensified and almost nullified the significant response of high yielding varieties (Panda *et al.*, 1983) Adjusting the time of planting to asynchronize the vulnerable stages of the crop and peak pest population is essential as one of the strategies in pest management as reported by Krishnaiah *et al.* (1983) and Saroja (1983). Besides, light trap counts were useful to monitor the brood emergence of yellow stem borer, and occurrence of gall midge, leaf folder, green leaf hopper and brown plant hopper and predators like coccinellid and mirid bug (Krishnaiah *et al*, 1983) Hence, experiments were conducted to determine the vulnerable stages of crop growth for pest incidence and to relate the data on light trap catches for their association.

MATERIALS AND METHODS

Four fortnightly plantings commencing from second fortnight of July during kuruvai season, five plantings starting from second fortnight of August during Samba season and five plantings starting from second fortnight of September during thaladi season were taken up in unreplicated plots of five cents each at Tamil Nadu Rice Research Institute, Aduthurai. The varieties ADT 31, CO 40 and IR 20 were planted during kuruvai, samba and thaladi seasons respectively. Population of GLH, BPH, white leafhopper (WLH) and white backed planthopper (WBPH) were recorded at weekly intervals on 10 hills selected at random per plot starting from 15 days after transplanting. The damage due to LF, WM and SB was recorded on the same 10 hills selected. Yield data were recorded at harvest in all the plots

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Light trap data were collected continuously from August 1, 1981 to March 5, 1982. For this, mercury vapour lamp (modified Robinson type) -250 watts was operated from 6 pm to 6 am. The light trap catch per day was calculated for every standard week. Correlation was worked out between light trap catches and field population of GLH and BPH.

RESULTS AND DISCUSSION

Population of GLH and BPH reached maximum of 13.45 and 19.64 during kuruvai as well as 10.47 and 19.53/10 hill during samba season respectively on crop planted on 16.8.81. During thaladi season, GLH population was more on crop planted during first fortnight of November (13.64/10 hill). WLH and WBPH did not show any marked difference among various plantings probably due to very low population.

Leaf folder damage reached 15.46 per cent during kuruvai season on crop planted on 1.9.81 and the low yield obtained was mainly due to severe attack of this pest at panicle initiation and flowering stage. During samba and thaladi seasons, the LF damage was more on September planted crop and it was reduced in subsaquent plantings (Table 1). Karuppuchamy *et al.* (1982) also reported severe incidence of LF on crop planted during September. Saroja and Raju (1983) reported heavy leaf folder damage on crop planted during August

Table 1 : Influence of time of planting on the incidence of rice pests and grain yield

Season and planting date	Variety	Population/10 hills				Infestation %			Yield kg/ha.
		GLH	WLH	BPH	WBPH	LF	WM	SB(DH)	
KURUVAI									
16-7-81	ADT 31	7.36	0.27	10.64	7.36	0.49	5.81	0.00	4850
1-8-81	ADT 31	11.27	0.18	12.72	4.36	1.07	5.28	0.12	5580
16-8-81	ADT 31	13.45	0.18	19.64	3.00	2,54	7.75	0.23	4000
1-9-81	ADT 31	11.72	0.27	9.45	4.55	15.46	10.83	0.59	1600
SAMBA									
16-8-81	CO 40	10.47	0.27	19.53	5.33	2.64	5.81	1.25	3500
1-9-81	CO 40	10,33	0.33	10.73	5.86	12.04	9.21	4.95	5150
16-9-81	CO 40	5.33	0.20	3.80	3.33	10.98	6.55	7.71	5100
2-10-81	CO 40	4.00	0.40	3.80	1.20	3.51	3.91	4.60	5500
17-10-81	CO 40	9.20	0.06	4.00	5.47	1.69	2.93	5.68	4000
THALADI									
16-9-81	IR 20	6.54	0.23	1.85	1.92	18.56	6.27	12.30	1700
2-10-81	IR 20	6.00	0.31	2.77	3.00	3.69	2.28	9.48	3850
17-10-81	IR 20	8.85	0.00	5.15	2.23	0.63	5.27	3.94	4050
7-11-81	IR 20	13.69	0.31	3.23	3.15	0.30	3.25	0.83	2950
24-11-81	IR 20	12.08	0.38	2.62	2.62	0.15	4.70	1.38	2600

Table 2: Correlation between field population of GLH and BPH and light trap catches

	GLH		BPH	
	Field population/10 hill	Light trap catches (mean catches/day)	Field population/10 hill	Light trap catches (mean catches/day)
August				
1-7	1.00	4.29	—	—
8-14	7.00	18.71	—	—
15-21	13.50	98.29	—	—
22-28	12·50	40.71	2 50	69.57
29-4	8.00	39.14	1.75	10.60
September				
5-11	14.50	120.14	0.25	12.43
12-18	16.67	2506.00	5.67	83.57
19-25	13.67	1752.00	5.56	771.43
26-2	15.25	1712.29	6.13	1200.14
October				
3-9	24.38	19907.14	33.75	10194.29
10-16	8.00	4460.57	27.50	30749.57
17-23	9.40	2846.57	15 89	5854.29
24-30	7.11	2700.43	12.89	2841.57
31-6	2.90	3078.71	1.90	3172.71
November				
7-13	3.90	1497.86	5.00	1937.29
14-20	4.67	161.57	6 89	565.00
21-27	3.50	78.29	4.10	137.71
28-4	0.67	21.71	0.78	37.71
December				
5-11	2.50	214.29	3.00	28.57
12-18	3.70	120.14	2.60	29.71
19-25	5.22	105.86	4.78	69.57
26-1	6.43	1.29	2.29	7.00
1982 January				
2-8	13.57	35.59	5.57	45.14
9-15	16.17	14.00	4.50	3.57
16-22	24.80	46.29	6.20	3.85
23-29	15.40	46.86	6.80	10.29
30-5	14.00	179.29	6.67	16.86
February				
6-12	17,67	488.43	6.00	42.43
13-19	8.00	229.71	7.00	34.57
20-26	13.00	85.71	2.00	17.14
27-5	12.00	53.29	1.00	14.14

5th to September 5th because maximum tillering and early flowering coincided with peak LF population. Because of reduction in LF damage, a maximum yield of 5.50 and 4.05 ton/ha were obtained from the crop planted during October 2 and 17 in samba and thaladi seasons respectively. The low yield of 1.7 t/ha during thaladi season on crop planted during September 16th was mainly due to heavy LF damage (18.56% followed by SB attack (12.30%).

Whorl maggot attack was more (10.83%) on ADT 31 planted on

1.9.81 followed by CO 40 (9.21%) and IR 20 (6.27%) planted on 16.9.81. But the yield loss may not probably be due to WM damage since the crop recovered after sometime, but mainly due to LF damage.

Light trap data indicated that GLH increased from August and reached a maximum of 19,907/day during the first week of October. Similarly the population of BPH reached a maximum of 30,750/day during the second week of October (Table 2). Thereafter a decreasing trend was obtained upto the first week of December. Then the population of GLH and BPH raised during first week of February and later on decreased. The catches made at Aduthurai by Annamalai *et al.* (1983) also indicated the peak BPH population during the first fortnight of October. But in contrast to their study, the BPH made its appearance in good number during the late August instead of early July. This may probably due to the late planting of kuruvai in the cauvery delta during the year. Manjunath (1982) reported two peaks of GLH and BPH during May and November. But in the present studies, only one major peak was obtained during the first fortnight of October. This had coincided with panicle initiation or early flowering stage during Kuruvai and early tillering stage during Samba seasons and breeding of pests was possible in the entire cauvery delta.

The population of GLH was more in the field from third week of August to first week of October whereas the population of BPH was more during the entire month of October. The simple correlation worked out indicated a positive relationship between the field population and light trap catches in both BPH and GLH. The regression equations fitted were

Field population of

$\hat{Y}$ GLH = 183.12 x - 405.72

$\hat{Y}$ BPH = 618.2 x - 2100.86

Where x= population in the light trap.

The above studies indicated the optimum plantings were August first week, October first week and October third week for kuruvai, samba and thaladi respectively to record less incidence of pests and to realise stabilised yield.

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