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Short Comminucation

Seasonal incidence of green leaf hopper of rice grown under SRI and conventional methods of planting and its relation with weather parameters

A. M. KAKDE*[1], K. G. PATEL[1] and B. M. MOTE[2]

[1]Department of Entomology, [2]Agricultural Meteorological Cell, Department of Agriculutral Engineering,
N.M College of Agriculture, NAU, Navsari- 396 450 (Gujarat)
Email: amoljau@gmail.com

Rice faces various pest problems starting from seedling to maturity stage. Rice hoppers complex infest all stages of the rice crop and both nymphs and adults suck the sap from the base of the tillers, resulting in yellowing and drying of the plants. The symptoms spread as patches of infestation from a point outwards known as 'hopper burn' within the field. Outbreaks of plant hoppers recently have caused serious concern and in the last decade plant hoppers have rapidly spread to newer non-traditional areas (Atwal and Dhaliwal, 2002). Climate change is expected to increase the prevalence and distribution of pest species as temperatures and rainfall patterns changes. With SRI management, farmers observe less loss to pests and diseases even though they use fewer agrochemicals as SRI plants are generally more resistant to pests and diseases in comparison with conventional planting method. (Anonymous 2010). Hence the present investigation was carried out on seasonal incidence of rice green leaf hopper in relation to different methods of planting and its correlation with weather parameters.

Study of seasonal incidence and effect of the weather parameters, on population of rice green leaf hopper under South Gujarat condition was carried out at Wheat Research Station Farm, Navsari Agricultural University, Bardoli during the *Kharif* 2012 and 2013. To know the incidence of green leaf hopper, *N.virescens* observations on total number of nymph and adults on twenty randomly selected spots each comprising five hills were recorded at weekly interval. Similarly, the total number of damaged and healthy hills were recorded from randomly selected twenty spots of one m^2 area. The spots were selected by walking "M" or "W" fashion in the field. The simple correlation was worked out between different weather parameters and incidence of green leaf hooper by using MS-SPSS software.

The rice green leaf hopper recorded under conventional and SRI methods of planting (Table 1) showed that the hill damage and the population of nymphs and adults initiated in first week of September (36^{th} SMW) and increased continuously and reached to the peak stage during first week of October (40^{th} SMW). The peak values of hill damage in conventional and SRI methods were 2.39 and 2.13 respectively. The amount of severity of the pest was seen at the flowering, dough and grain formation stages of the crop and thereafter, the incidence declined and observed till harvest of the crop (43^{rd} SMW). The peak values of nymphs and adults under conventional and SRI methods were 12.05 and 8.73 respectively. The infestation level and the population of rice green leaf hopper under SRI method of planting was found comparatively less than that under conventional planting method. Similar findings have been reported by Shamim *et al.* (2009).

Correlation study

The correlation coefficient worked out between weather parameters and per cent hill damage and GLH population under two methods of plantings are presented in Table 2. It is seen that the temperature, relative humidity and sunshine hours significantly influenced the GHL population and hill damage, while rainfall did not have significant influence, neither under conventional method nor under SRI method. Maximum temperature and sunshine hours were found to have positive correlation with GHL population and hill damage, while minimum temperature and relative humidity have negative influence on green leaf hopper. There was not much difference in correlation coefficient values between the two methods of planting.

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Table 1: Seasonal incidence of rice green leaf hopper (GLH) in conventional and SRI Method (Pooled for 2012 and 2013)

Std. Weeks	Per cent hill damage by GLH		Average nymphs and adults population of GLH	
	Conventional method	SRI method	Conventional method	SRI method
36	0.29	0.24	1.86	1.14
37	0.82	0.69	3.03	1.95
38	1.52	1.16	6.09	4.50
39	2.08	1.67	8.92	6.62
40	2.39	2.13	12.05	8.73
41	2.15	1.65	11.30	7.51
42	1.88	1.42	9.49	6.21
43	1.60	1.16	6.71	4.93

Table 2: Correlation of rice green leaf hopper incidence and population with weather parameters in conventional and SRI method during *Kharif* 2012 and 2013

Weather parameters	Per cent hill damage		GLH Population	
	Conventional method	SRI method	Conventional method	SRI method
Max. temp. (^{0}C)	0.764**	0.729**	0.768**	0.751**
Min. temp. (^{0}C)	-0.661**	-0.617**	-0.622**	-0.620**
Relative humidity (%)	-0.579*	-0.531*	-0.544**	-0.555**
Rainfall (mm)	0.197	0.192	0.311	0.202
Bright sunshine hrs.	0.843**	0.807**	0.836**	0.822**

* Significant at 5% level (r = 0.482) and ** at 1% level (r = 0.606).

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