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Seasonal incidence of Gundhi bug on rice under agro-climatic condition of Allahabad

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Abstract

This experiment was studied the seasonal incidence of rice gundhi bug [*Leptocorisa acuta* (Thonberg)] on rice under agro-climatic condition of Allahabad, at Central Research Farm, SHUATS, Naini, Allahabad during *kharif* season of 2016. Initial incidence of the rice gundhi bug was noticed on the 38th (third week of September) standard week and reached the peak in the 43rd (fourth week of October) standard week. At that time, average maximum temperature was 34.31°C and minimum temperature was 24.80°C, average morning relative humidity was 90.20% and evening 53.70%, average wind velocity was 1.01km/ hour and average sun shine hour was 8.7 hours.

Keywords: Correlation, Gundhi bug, rice, seasonal incidence

Introduction

Rice (*Oryza sativa* L.) is the central to the lives of billions of people around the world. Rice (2n=24) belonging to the family, Poaceae and subfamily, Oryzoidea is the world's most important cereal crop and serves as the primary source of staple food for more than half of the global population. It has one of the largest germplasm collections in the world. Human selection and adaptation to diverse environments have created a large number of cultivars and it is estimated that about 1,20,000 varieties of rice exist in the world. (Khush, 1997) [5].

Today, the majority of all rice produced comes from China, India, Indonesia, Bangladesh, Vietnam, Thailand, Myanmar, Pakistan, Philippines, Korea and Japan. Asian farmers still account for 87% of the world's total rice production.

Asia accounts for about 90% of world's rice area and production. Among the rice growing countries, India has largest area under rice in the world (about 44.6 m.ha.) i.e. 28% of the world area of production, and ranks second next to China. The share of India to the world's production is near about 22.1 percent. In Madhya Pradesh, the area under rice cultivation is 5144.6 million hectares with production of 5748.3 million tonnes with a productivity of 1-2 t/ha. (Anonymous, 2011) [1].

In modern agriculture, high yielding rice varieties are extensively grown with the use of fertilizers and manures. Such cultivation pattern of rice accidentally or inadvertently offers infestation of a large number of insect pests, which results in to severe loss in crop yields. (Neeta *et al.*, 2013) [6].

Rice gundhi bug, *Leptocorisa acuta* (Thumb) is an important pest of rice (Rao and Prakash, 1995) [7]. The rice bugs both nymphs and adults causes damage by feeding on the sap of milky grain and turns them chaffy. Rice gundhi bug is one of the serious pests of rice in India and sometimes reduce yield by as much as 30%. The adults are slender and brown-green. They measure 19-16 mm long. The younger instars are pale in color. The nymphs have long antennae. The older instars measure 1.8 - 6.2 mm long. They are yellowish green. The eggs are oval, shiny, and reddish brown. They are laid in batches of 10-20 in one to three rows along the midrib on the upper surface of the leaf. (Tiwari *et al.*, 2014) [11].

Materials and methods

The experiment was conducted during the *kharif* 2016 at the Central Research Farm, SHUATS, Naini, Allahabad. In the experiment, the variety under supervision 'Rupali' was grown for this study. The rice variety Rupali was shown on 10 July 2016. Later the seedlings of sufficient age were transplanted to main field. Transplanting was done on 31 July 2016 with spacing row to row 20 cm and plant to plant 10 cm with two plants per hill at depth of 5 cm

and all the agronomical practices viz. irrigation, fertilizer application and intercultural operations were followed as recommended for rice crop in this area to raise the crop.

The pest population observation was recorded in 7 days interval, after 18 days of transplanting. The population dynamics were determined by correlating weather parameter seasonal incidence of *Leptocorisa acuta* (Thon.) (Dutta and Roy 2016) [2].

Results and discussion

The occurrence of rice gundhi bug *Leptocorisa acuta* (Thon.) 38th standard week (September 3rd week) on rice crop with an infestation of average 0.40 gundhi bug per Hill. The gundhi bug population increased and gradually reached peak level of 3.80 gundhi bug per Hill on 43rd standard week (October 4th week). The correlation studies revealed that only sunshine ($r = 0.556$) showed significant positively correlation with minimum temperature ($r = -0.008$), maximum temperature ($r = 0.223$), rainfall ($r = -0.356$) morning relative humidity ($r = 0.010$) and evening relative humidity ($r = -0.171$) with per cent incidence of rice gundhi bug at 1 and 5 per cent level of

significance. At that time, average maximum temperature was 34.31 °C and minimum temperature was 24.80°C, average morning relative humidity was 90.20% and evening 53.70%, average wind velocity was 1.01km/ hour and average sun shine hour was 8.7 hours.

Similar results were found with Sharma *et al.* (2004) [8] observed *Leptocorisa acuta* Thunberg (Alydidae, Hemiptera) had maximum population in second and third weeks of October during the aforesaid period. Girish *et al.* (2012) [3] observed gundhi bug population appeared during reproductive phase of the crop. Shitiri *et al.* (2014) [9] reported the incidence of ear head bug was observed from 60 days after transplanting till harvest. Peak incidence was observed at 120 days after transplanting. Kalita *et al.* (2015) [4] observed gundhi bug population was found maximum when the crop attained the milky stage in the first fortnight of October. Sulagitti *et al.* (2017) [10] reported gundhi bug was first observed during 2nd week of September and its activity gained momentum during the third week of September and reached highest level during 4th week of October.

Table 1: Incidence of rice gundhi bug with weather parameters given during *kharif* season 2016:

Weeks	Population of Gundhi bug per hill	Temperature(°C)		Humidity (%)		Rain fall	Wind velocity (km/hr)	Sunshine (hr/day)
		Max	Min	Mor	Eve			
32	0	33.8	27.14	88.2	55.4	4.3	1.28	5.1
33	0	33.1	27	91.7	56.7	25.9	2.22	2.7
34	0	34.4	27.1	88.7	55.7	6.2	2.55	5.6
35	0	35.8	27.2	90.5	53.4	6.9	1.68	5
36	0	35.1	27.2	87.8	53.8	0.6	2.2	8
37	0	35.2	27.2	89.4	54.2	4.9	1.2	8.3
38	0.4	33.2	26.87	89.14	62.5	1.1	0.8	6.6
39	0.7	30.2	26.2	89.4	66.2	8.02	0.6	5.2
40	1.06	34.6	26.6	87.4	53.8	6.3	2.2	7.4
41	2.3	34.4	26.3	89.8	52.2	1.4	1.01	8.5
42	2.9	35.05	25.7	89.7	51.8	0	0.8	8.7
43	3.8	34.3	24.8	90.2	53.7	0	1.01	8.7
44	2.2	33.9	19.8	90.7	54.4	0	1.08	8.5
45	1.3	33.14	18.2	91.8	55.7	0	1.02	6.9
46	0.8	32.7	16.9	91.4	53.8	0	0.6	8.5
47	0	31.9	15.3	92	48.5	0	0.6	8.4
48	0	29.5	15.15	92.8	54	0	0.5	6.3
r =		0.223	-0.008	0.010	-0.171	-0.356	-0.288	0.556
		ns	ns	ns	Ns	Ns	ns	S

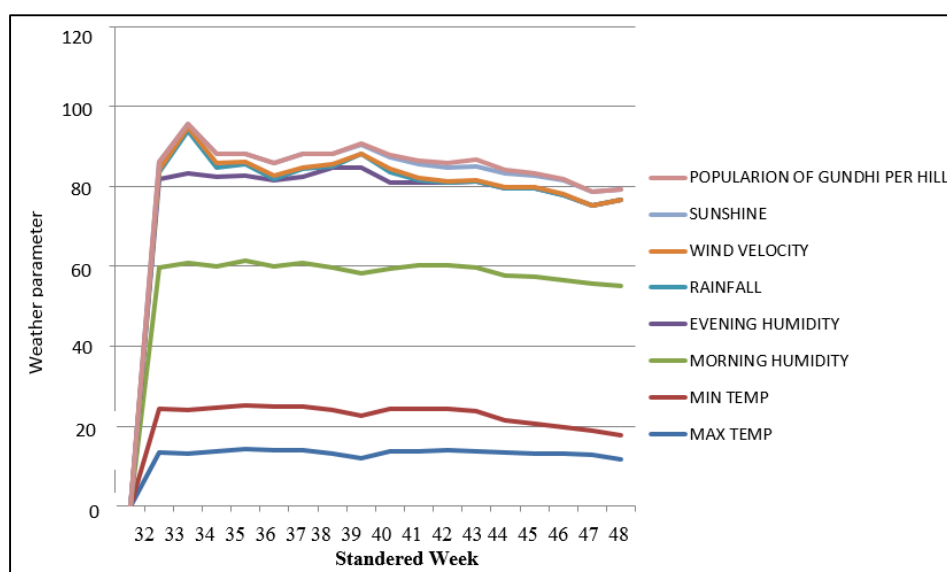


Fig 1: Incidence of rice gundhi bug with weather parameters given during *kharif* season 2016 Graphical representation

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