Int.J.Curr.Microbiol.App.Sci (2019) *8*(4): 381-393

International Journal of Current Microbiology and Applied Sciences
***ISSN: 2319-7706* Volume 8 Number 04 (2019)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2019.804.042

Seasonal Incidence of Insect Pest Species of Paddy Collected through Light Trap

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Keywords

Light Trap, Seasonal Incidence, Rice, Insect Pest Species

Article Info

Accepted:
04 March 2019
Available Online:
10 April 2019

A B S T R A C T

The present investigation study on Seasonal Incidence of Insect Pest Species of Paddy Collected Through Light Trapat Jabalpur was carried out at the Krishi Nagar experimental farm, Adhartal, JNKVV, Jabalpur, Madhya Pradesh during the period between the last week of June to the last week of December, 2015.Result showed that all 8 species were identified as pests of paddy having regular occurrence in light trap catches i.e. Rice gundhi bug, *Leptocorisa acuta* (Thunberg), Green leaf hopper, *Nephotettix virescens* (Distant), Army worm, *Mythimna separata* (Walker), Rice leaf folder, *Cnaphalocrocis medinalis* (Guene), Rice butterfly, *Melanitis ledaismene* Cramer, Short horn grass hopper, *Tetrix subulata* Linnaeus, Field cricket, *Euscyrtus concinnus* (de Haan) and Mole cricket, *Gryllotal paorientalis* Burmeister. Correlation studies revealed that between various weather parameters and Rice gundhi bug, *Leptocorisa acuta* (Thunberg), Green leaf hopper, *Nephotettix virescens* (Distant), Army worm, *Mythimna separata* (Walker), Rice leaf folder, *Cnaphalocrocis medinalis* (Guene)catches were found non significant and Rice butterfly, *Melanitis ledaismene* Cramer and Short horn grass hopper, *Tetrix subulata* Linnaeus showed that significant positive correlation with maximum temperature while Field cricket, *Euscyrtus concinnus* (de Haan), Mole cricket, *Gryllotalpa orientalis* Burmeister catches were found significant positive correlation with maximum temperature and evaporation.

Introduction

Light trap is an important tool for minimizing the insect pests damage without any toxic hazards (Sharma *et al.*, 2004). Other than this light trap has been used to supplement the knowledge of pest fauna of given locality, geographical distribution and their seasonal activity etc. (Verma andVaishampayan, 1983 and Sharma et. al., 2010). Light trap is also useful to know the effect the weather factors on species abundance (Jonason *et al.*, 2014).

Many insects are positively phototrophic in nature and use of light traps for insect catches produces valuable faunistic data. This data can be seen as a parameter of health of biodiversity of the concerned vicinity. The data provided by light trap catches could throw light on period of maximum activity of

insects (Dadmal and Khadakkar, 2014). Ramamurthy *et al.*, (2010) used Mercury, Black and Ultra-violet light traps for insect capture and found that Coleopterans dominate the catches followed by Hemipterans, Hymenopterans and Lepidopterans. Light trap plays an important role in monitoring and management of insect pest population in Agro-ecosystem. The phototropic behavior of insects makes the scientist capable to use light trap for capturing insects either for study or destruction.

Rice (*Oryza sativa* L.) is an important cereal crop in the world serving as staple diet for millions of peoples. Rice stand second in the world after wheat in area and production. Almost 90% of rice is grown and consumed in Asia (Anonymous, 2015).

In India it is cultivated in an area of 44.00 million hectares with a production of 104.80 million tonnes and productivity of 2177kg ha^{-1} whereas estimated production in 2015-16 is 106.10 million tonnes. In Madhya Pradesh the area, production and productivity of rice are 1.76 million hectares, 1.87 million tones and 1062 kg ha^{-1} respectively, which is far below the national average (Anonymous, 2016).

Worldwide food plants are damaged by more than 10,000 species of insects. In India average losses in paddy production due to insect pests are 25-30% (Dhaliwal and Arora, 2010) and in Madhya Pradesh about 40-100 % losses were observed (Dhamdhere, 1990). Pathak and Dhaliwal (1981) reported that over 100 insect pest species attacks paddy crop at various stages of its growth in which 20 species cause the economic damage.

The forecasting and predication of insect occurrence or outbreak can be made by using light trap. These studies are helpful in the rational and timely application of insecticide which may lead to better and cheaper insect control with least hazards.

Shimoda and Honda (2013) observed that nocturnal insects are often attracted to light sources that emit large amount of UV radiation, and devices that exploit this behavior, such as light traps for forecasting pest outbreaks and electric insect killers, have been developed. Light trap are also found effective in minimizing the insect pests population in different crops, Sharma and Vaishampayan (2009) evaluated light trap as direct control tool against major pest species of paddy in Jabalpur M.P., with exception of army worm *Mythimna separata* (Walker). Results have consistently proved the utility of light trap as direct control tool against remaining three major species namely *Sogatella furcifera* (Horvath), *Cnaphalocrocis medinalis* (Guene) and grass hopper (Complex). Effective coverage area was between 100-200 m distances from trap covering around 5 to 6 ha of crop area per trap.

Muchala (2014) revealed that 69 species belonging to 11 orders and 37 families were recorded throughout the season (*kharif*2013). Based on number of species collected, largest collection was represented by order Lepidoptera (20 species) and followed by orders Hemiptera (15 species), Coleoptera (15 species), Orthoptera (6 species) and Hymenoptera (5 species) in descending order respectively and natural bio-control agents was represented by 7 orders, 15 families and 25 species as predators and 1 order, 3 families and 4 species as parasites.

Extensive work has been carried out on various aspects of light-trap designs, light sources and use of light trap against pests of pulses, but very little information is available on insect pests of paddy in central India (Mahakaushal region of M.P.). Therefore, the present investigation is proposed to observe the “Seasonal Incidence of Insect Pest Species of Paddy Collected Through Light Trap”.

Materials and Methods

Present experiment entitled, "Seasonal Incidence of Insect Pest Species of Paddy Collected through Light Trap" was carried out at the Krishi Nagar experimental farm, Adhartal, JNKVV, Jabalpur, Madhya Pradesh during the period between last week of June and last week of December, 2015.

Details of light trap unit

New Jawahar light trap model developed at JNKVV, Jabalpur with mercury vapor lamp (80 W) as light source was used for the present study. The light trap units comprised of two components are as follows:-

Trapping device

It is made up of 24 gauge GI sheet consisting of a funnel (40 cm top diameter), baffle plates each 30 x 12 cm in size. In this design long funnel stem (pipe) is provided in place of collection chamber which is directly attached to collection trey.

Insect collection device

It is made up of 24 gauge GI sheet 40 cm x 40 cm x 15 cm in size with cupboard and built-in locking system. The insects collected in the chamber of light trap were killed by the exposure of Dichlorvos 76 EC vapours (as fumigating agent) which is directly placed in collection tray for instant killing of trapped insects.

Observation procedure

Seasonal activity study of major insect pest species of paddy was recorded by operating the light trap in *Kharif* season of 2015. Major and minor pests of paddy were observed on daily basis. In order to study the seasonal activity, daily trap catch was converted into weekly total and mean per day per week (weekly mean/day).

Weekly divisions are based on standard meteorological week. Observations of weather data (Maximum temperature, Minimum temperature, relative humidity morning and evening, rainfall, number of rainy days, sunshine hours, wind velocity, morning and evening vapour pressure and evaporation etc.) were recorded on daily basis from JNKVV meteorological observatory.

The correlation coefficient between major insect pests of paddy and various weather parameters was calculated by using the correlation regression analysis.

Statistical method

Correlation and regression of the abiotic factors on major insects were worked out by using the formula as suggested by Snedecor and Cochran (1967).

$$\text{Correlation 'r'} = \frac{\sum xy - \frac{\sum x \sum y}{n}}{\sqrt{\left\{\sum_x 2 - \frac{((\sum x)^2)}{n}\right\}\left\{\sum_y 2 - \frac{((\sum y)^2)}{N}\right\}}}$$

Regression $\hat{Y}$ = a + bx (R^2)

a = Intercept.

b = Regression coefficient.

R^2 = Coefficient of multiple determination.

Test of significance 'r'

$$t = \frac{r}{\sqrt{1 - r^2}}\sqrt{n - 2}$$

Results and Discussion

Seasonal incidence of major insect pest of paddy collected in light trap were studied by

operating, Jawahar light trap (with 80 Watt mercury vapour lamp) in paddy field at Krishi Nagar experimental farm, Adhartal during *kharif* 2015 (June to December). The data of every day catch of major insect pest species of paddy collected in trap were converted to standard weekly averages. In all 8 species were identified as pests of paddy having regular occurrence in light trap catches (Table 1).

Correlation studies

The correlation coefficients among various insect population and weather parameters viz., maximum temperature, minimum temperature, sunshine (Table 2, 3 and 4), wind velocity, morning relative humidity, evening relative humidity, rainfall, morning vapor pressure, evening vapor pressure, evaporation and number of rainy days have been computed.

Rice gundhi bug, *Leptocorisaacuta* (Thunberg)

Rice gundhi bug was first appeared during 33rd SW in light trap catches. Major active period was August to December with two distinct peaks 41st SW and 45th SW. Highest peak was recorded during 45th SW.

In accordance with the present findings, Sharma *et al.*, (2011) also reported through light trap collection over 15 years that maximum population of *L. acuta* was observed during third week of October. Similarly Venkatesh *et al.*, (2009) also reported that higher activity of ear head bug, *Leptocorisa* sp. was observed during September to October in light trap catches, While Rai *et al.*, (1990) reported two peaks of *L. acuta* in the 37th and 40th weeks of each year.

Correlation studies between various weather parameters and rice gundhi bug catches were found non significant.

In contrast with the present findings, Sharma et al (2004) found that rainfall had positive correlation of order 0.857 with population build up of *L. acuta* whereas Bhatnagar and Saxena (1999) found a positive correlation between maximum temperature and sunshine and trap catches of *L. acuta*, they also found significant negative correlation of minimum temperature, evening relative humidity and rainfall with light tap catches of *L. acuta* at Jagdalpur, India.

Green leaf hopper, *Nephotettixvirescens* (Distant)

Green leaf hopper was first appeared during 32nd SW in light trap. Major activity period was August to December with three distinct peaks during 34th SW, 38th SW and 42nd SW respectively. Highest peak was recorded during 34th SW.

Confirms the present findings Sharma et. al. (2004) who also reported that maximum population of *N.virescens* was recorded during the 3rd week of October. On the contrary Rai *et al.*, (2002), Manimaran and Manickavasagam (2000) and Sabale *et al.*, (2010) reported that peak activity of *N. virescens* in light trap was observed during first fort night of August, month of September (Kuruvai season in Tamil Nadu) and 38th to 41stSW, 45th SW and 52nd to 2nd SW at Pattambi, Kerala respectively, Kathirvelu and Manickavasgam (2007) also recorded green leafhopper (GLH) during the 33rd and 35th SW respectively through trap catches.

Correlation between green leafhopper and maximum temperature, minimum temperature, sunshine, evening relative humidity, wind velocity, morning vapor pressure, evening vapor pressure and evaporation showed positive correlation with hopper catches, but statistically found non

significant while rainfall, morning relative humidity and number of rainy days exhibited negative correlation and statistically found non significant.

Similarly Kathirvelu and Manickavasgam (2007) reported positive correlation *N. virescens* catches in light trap and maximum, minimum temperature and sunshine except rainy days. Joseph *et al.,* (1994) also observed inverse relationship between the trap catches of *N. virescens* and relative humidity, while Samim *et al.,* (2009) revealed that the bright sunshine hours had a significant positive correlation (r=0.166) with green leaf hopper.

Army worm, *Mythimna separata* (Walker)

Army worm was first appeared during 36th SW in light trap catches. The activity period of *Mythimna separata* (Walker) was observed from September to December, higher numbers during 45th SW (forming the highest peak).

In accordance with the present findings Sharma *et al.,* (2013) reported that highest peaks of *M. separata* were observed during 3rd week of September and November. Sharma *et al.,* (2002) also reported that *Mythimna separata* (Walker) was observed highest in trap catches during September but first appearance of *Mythimna separata* (Walker) adults in trap catches was observed 15-20 days after initiation of the monsoon rains in the first week of June, which is in contrast with the present finding.

Correlation between various weather parameters and moth catches of army worm were found non significant.

On contrast to the present findings, Muchhala (2014) reported that maximum temperature and evaporation exhibited a significant positive effect on moths catches, while Sharma *et al.,* (2013) found that higher rainfall, lower mean maximum temperature and higher relative humidity were favourable for *M. separata*. Sharma *et al.,* (2002) reported that rainfall, morning and evening relative humidity were positively associated with trap catches, while maximum temperature, evaporation, sunshine and wind velocity showed a negative correlation with trap catches of *M. separata*.

Rice leaf folder, *Cnaphalocrocis medinalis* (Guene)

Rice leaf folder was first recorded during 38^{rth} SW in light trap. The activity period of *C. medinalis* was observed from September to October. The one's only one distinct peak was recorded in 41st SW.

Patel *et al.,* (2011) also reported that rice leaf folder, *C. medinalis* reached its peak level during 43rd SW, Khan and Ramamurthy (2004) revealed that the moth numbers were higher in the month of October, followed by September.

In contrast with the present findings, Harinkhere *et al.,* (1998) who reported that first appearance of *C. medinalis* in trap catches started from 2nd week of August and major peaks were observed during September to October in Balaghat (M.P.). Similarly Manisegaran and Letchoumanane (2001) reported that weekly catches of rice leaf folder were highest during October and November in Tamil Nadu. Sharma et. al. (2013) recorded 3 distinct peaks of rice leaf folder during the main cropping season of paddy in which highest weekly peaks were observed during the 4^{rth} week of September and October.

Correlation between various weather parameters and adults of rice leaf folder catches were found non significant.

In conformity with the present findings, Muchhala (2014) also observed that all the weather parameters did not show any significant effect on moth catches, while Patel *et al.*, (2011) reported that wind velocity (r=-0.539) and rainy days (r=-0.518) had significant negative correlation.

Sabir *et al.*, (2006) observed that the maximum and minimum temperature had negative effect, while rainfall having positive effect on trap catches of *C. medinalis*. Kathirvelu and Manickavasgam (2007) also reported that leaf folder had significant negative correlation with maximum temperature and significant positive correlation with sunshine.

Rice butterfly, *Melanitis ledaismene* Cramer

Rice butterfly was first recorded during 35th SW in light trap. The activity period of *M. ledaismene* was observed from August to November with two distinct peaks, 41st SW and 42nd SW. The highest weekly peak was observed in 41st SW.

Muchhala (2014) reported three distinct peaks during 38^{rth}, 42nd and 44^{rth} SW, respectively. Major activity period was observed from August to December at Jabalpur. On contrary to the present findings, Sharma (2004) reported that major activity period of *Melanitis ledaismene* Cramer was observed in light trap from July to October with highest monthly catches during September at Jabalpur, M.P.

Correlation between various weather parameters and rice butterfly catches were found non significant, except maximum temperature, which exhibited a significant positive effect on butterfly catches. Similarly Muchhala (2014) was reported that maximum temperature exhibited a significant positive effect on butterfly catches.

Short horn grass hopper, *Tetrixsubulata* Linnaeus

Short horn grass hopper was first observed in light trap during 26th SW. Major activity period was June to December with three distinct peak 32nd SW, 36th SW and 41st SW respectively. The highest peak was observed 41st SW.

Williams *et al.*, (1996) also observed *Tetrix subulata* Linnaeus in light trap catches. In contrast to the present findings Sharma (2006) observed two species of grass hopper viz. *Trilophidia cristella* S. and *Gastrimargus transversus* in light trap catches in paddy field during 2002 (*kharif* season) at Jabalpur, while similar to the present findings, Singh and Ramaneek (2007) reported that population fluctuations of twenty four species of orthopterans, were correlated with temperature and relative humidity,

In all six families viz. Gryllidae, Gryllotalpidae, Tettigoniidae (belonging to Suborder Ensifera) and Acrididae, Tridactylidae, and Tetrigidae (belonging to Suborder Caelifera) were collected. Gryllidae was found dominant followed by Tetrigidae as compared to other families.

The correlation coefficients between *T. subulata* and minimum temperature, sunshine, wind velocity, morning vapor pressure, evening vapor pressure and number of rainy days exhibited positive effect but statistically found non significant except maximum temperature that is significant while rainfall, morning relative humidity and evening relative humidity showed negative effect but statistically found non significant.

On contrary to the present findings Muchhala (2014) reported correlation between various weather parameters and grass hopper catches were found to non significant, except

sunshine, which exhibited a significant positive effect on hoppers catches while wind velocity and number of rainy days showed a significant negative effect on hoppers catches.

Field cricket, *Euscyrtus concinnus* (de Haan)

Field cricket was first recorded during 26th SW in light trap. The activity period of *E. concinnus* was observed from June to December with two distinct peaks during 38th and 40th SW.

The highest peak was observed in 38th SW.

In conformity with the present finding Sharma *et al.,* (2004) also reported the major activity period of field cricket between July and October with maximum monthly catches during July. While Rathore (2001) reported that major activity period of field cricket was observed during September to October. Highest monthly catches were recorded during September (320 crickets).

The correlation studies between maximum temperature and evaporation showed significant positive correlation with field cricket catches. Minimum temperature, sunshine, wind velocity, morning vapor pressure and number of rainy days also showed positive correlation, but statistically found non significant while morning relative humidity, evening relative humidity and evening vapor pressure exhibited negative correlation, and statistically found non significant.

On contrary to the present findings Meena (2015) reported correlation between minimum temperature, rainfall, evening relative humidity, wind velocity, morning vapor pressure, evening vapor pressure and number of rainy days showed significant positive correlation and field cricket catches was found significantly positive, while sunshine exhibited a significant negative effect on crickets catches. Effect of maximum temperature, morning relative humidity and evaporation was found non significant.

Mole cricket, *Gryllotalpa orientalis* Burmeister

Mole cricket was first recorded during 26th SW in light trap. The activity period of *Gryllotalpaorientalis* Burmeister was observed throughout the season (June to December) with two distinct peaks during 37th and 40th SW, during the highest peak 37th SW.

Similarly Rathore (2001) also reported that major activity period of mole cricket was observed during September to October with highest monthly catches during September (285 crickets) at Jabalpur. In contrast to the present findings, Wang *et al.,* (2013) reported that the mole cricket (*Gryllotalpa* sp.) had two damage peaks (late May to early July, early September to mid and late October) at Hangzhou China. Bhowmick (1985) reported that highest monthly catches of mole crickets were recorded during November (1395 adults) at Waraseoni, Balaghat, Madhya Pradesh.

Correlation between various weather parameters and mole cricket catches were found non significant, except maximum temperature and evaporation, which exhibited a significant positive effect on crickets catches.

Similarly Muchhala (2014) reported that correlation between various weather parameters and mole cricket catches were found non significant, except maximum temperature, which exhibited a significant positive effect on crickets catches.

In contrast to the present findings Meena (2015) reported correlation between various weather parameters and mole cricket catches

were found non significant, except minimum temperature, evening relative humidity morning vapor pressure and evening vapor pressure, which exhibited a significant positive effect on mole crickets catches.

Table.1 Seasonal incidence of insect pest species of paddy during *kharif* (June to December) 2015 (Weekly average)

SW	*Leptocorisa acuta* (Thunberg)	*Nephotettix virescens* (Distant)	*Mythimnase parata* (Walker)	*C. medinalis* (Guene)	*Melanitis leda ismene* Cramer	*Tetrix subulata* Linnaeus	*Euscyrtus concinnus* (de Haan)	*Gryllotalpa orientalis* Burmeister
26	0.00	0.00	0.00	0.00	0.00	5.50	235.30	2.50
27	0.00	0.00	0.00	0.00	0.00	3.50	78.14	4.57
28	0.00	0.00	0.00	0.00	0.00	2.20	64.29	1.14
29	0.00	0.00	0.00	0.00	0.00	2.71	107.14	4.43
30	0.00	0.00	0.00	0.00	0.00	1.20	78.14	1.57
31	0.00	0.00	0.00	0.00	0.00	0.57	0.71	0.29
32	0.00	1.43	0.00	0.00	0.00	3.00	12.14	0.43
33	1.14	1.71	0.00	0.00	0.00	2.00	2.71	0.43
34	5.43	131.43	0.00	0.00	0.00	1.86	14.57	0.29
35	4.86	49.29	0.00	0.00	0.29	3.29	13.00	3.86
36	6.43	37.86	5.71	0.00	6.00	4.43	80.57	1.43
37	8.43	0.00	4.21	0.00	3.00	1.14	45.29	8.14
38	5.00	124.29	2.10	1.50	2.29	1.86	281.43	4.86
39	8.57	88.86	3.80	3.00	2.43	0.43	69.29	2.57
40	11.00	34.71	4.45	2.00	9.57	1.43	244.29	5.86
41	17.00	90.00	9.00	5.70	34.14	6.14	170.00	3.00
42	10.00	113.14	8.86	0.00	12.29	4.71	217.57	3.29
43	13.43	67.86	8.86	0.00	2.43	3.00	25.71	2.14
44	18.14	83.14	12.14	0.00	0.43	3.71	21.14	4.14
45	32.14	44.29	18.14	0.00	7.71	2.14	21.14	3.14
46	11.71	19.29	5.00	0.00	0.14	1.50	7.57	1.43
47	2.43	3.71	1.43	0.00	0.00	0.14	19.00	0.71
48	2.57	0.14	0.29	0.00	0.00	0.71	5.00	0.86
49	0.00	0.00	3.14	0.00	0.00	0.00	0.00	0.00
50	0.00	0.00	0.86	0.00	0.00	0.00	0.00	0.00
51	0.00	0.00	5.14	0.00	0.00	0.00	0.00	0.00
52	0.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00

Table.2 Correlation coefficient of weather factors on light trap catches of *Leptocorisaacuta* (Thunberg) and *Nephotettix virescens* (Distant)

Weather Parameter	*Leptocorisa acuta* (Thunberg)		*Nephotettix virescens* (Distant)	
	r	Byx	R	Byx
Maximumtemperature (^{o}C)	0.14NS	-	0.28NS	-
Minimumtemperature (^{o}C)	-0.45NS	-	0.05NS	-
Sunshine (hrs)	0.18NS	-	0.28NS	-
Rainfall (mm)	-0.36NS	-	-0.01NS	-
Morning relative humidity (%)	-0.15NS	-	-0.24NS	-
Evening relative humidity (%)	-0.36NS	-	0.03NS	-
Wind Velocity (km/hr)	-0.43NS	-	0.37NS	-
Morning vapor pressure (mm)	-0.33NS	-	0.12NS	-
Evening vapor pressure (mm)	-0.37NS	-	0.05NS	-
Evaporation (mm)	-0.22NS	-	0.36NS	-
Number of rainy days	-0.41NS	-	-0.05NS	-
NS = Non Significant				

Table.3 Correlation coefficient of weather factors on light trap catches of *Mythimna separata* (Walker) *Cnaphalocrocis medinalis* (Guene) and *Melanitis ledaismene* Cramer

Weather Parameter	*Mythimna separata* (Walker)		*Cnaphalocrocis medinalis* (Guene)		*Melanitis ledaismene* Cramer	
	r	byx	R	Byx	R	byx
Maximum temperature (^{o}C)	0.31NS	-	0.93NS	-	**0.65***	**3.29**
Minimum temperature (^{o}C)	0.21NS	-	-0.78NS	-	-0.17NS	-
Sunshine (hrs)	-0.23NS	-	0.60NS	-	0.52NS	-
Rainfall (mm)	0.01NS	-	-0.55NS	-	-0.35NS	-
Morning relative humidity (%)	0.04NS	-	-0.33NS	-	-0.29NS	-
Evening relative humidity (%)	0.20NS	-	-0.68NS	-	-0.57NS	-
Wind Velocity (km/hr)	-0.07NS	-	-0.55NS	-	-0.41NS	-
Morning vapor pressure (mm)	0.21NS	-	-0.90NS	-	-0.32NS	-
Evening vapor pressure (mm)	0.20NS	-	-0.75NS	-	-0.44NS	-
Evaporation (mm)	0.01NS	-	-0.46NS	-	0.26NS	-
Number of rainy days	-0.09NS	-	-0.55NS	-	-0.35NS	-
*.= Significant at 0.05 level		NS = Non Significant				

Table.4 Correlation coefficient of weather factors on light trap catches of *Tetrix subulata* Linnaeus *Euscyrtus concinnus* (de Haan) and *Gryllotalpa orientalis* Burmeister

Weather Parameter	*Tetrix subulata* Linnaeus		*Euscyrtus concinnus* (de Haan)		*Gryllotalpa orientalis* Burmeister	
	r	byx	R	Byx	R	byx
Maximum temperature (^{o}C)	**0.47***	**0.44**	**0.55****	**28.67**	**0.42***	**0.50**
Minimum temperature (^{o}C)	0.04NS	-	0.11NS	-	0.01NS	-
Sunshine (hrs)	0.01NS	-	0.27NS	-	0.21NS	-
Rainfall (mm)	-0.04NS	-	-0.05NS	-	-0.20NS	-
Morning relative humidity (%)	-0.21NS	-	-0.22NS	-	-0.02NS	-
Evening relative humidity (%)	-0.01NS	-	-0.18NS	-	-0.13NS	-
Wind Velocity (km/hr)	0.06NS	-	0.03NS	-	-0.14NS	-
Morning vapor pressure (mm)	0.08NS	-	0.14NS	-	0.12NS	-
Evening vapor pressure (mm)	0.09NS	-	-0.01NS	-	0.04NS	-
Evaporation (mm)	0.22NS	-	**0.51***	**66.01**	**0.43***	**1.29**
Number of rainy days	0.19NS	-	0.09NS	-	0.01NS	-
***.= Significant at 0.05 level**			**NS = Non Significant**			

It is concluded based on the result that showed all 8 species were identified as pests of paddy having regular occurrence in light trap catches i.e. Rice gundhi bug, *Leptocorisa acuta* (Thunberg), Green leaf hopper, *Nephotettix virescens* (Distant), Army worm, *Mythimna separata* (Walker), Rice leaf folder, *Cnaphalocrocis medinalis* (Guene), Rice butterfly, *Melanitis ledaismene* Cramer, Short horn grass hopper, *Tetrix subulata* Linnaeus, Field cricket, *Euscyrtus concinnus* (de Haan) and Mole cricket, *Gryllotalpa orientalis* Burmeister. Correlation studies revealed that between various weather parameters and Rice gundhi bug, *Leptocorisa acuta* (Thunberg), Green leaf hopper, *Nephotettix virescens* (Distant), Army worm, *Mythimna separata* (Walker), Rice leaf folder, *Cnaphalocrocis medinalis* (Guene) catches were found non significant and Rice butterfly, *Melanitisledaismene* Cramer and Short horn grass hopper, *Tetrix subulata* Linnaeus showed that significant positive correlation with maximum temperature while Field cricket, *Euscyrtus concinnus* (de Haan), Mole cricket, *Gryllotalpa orientalis* Burmeister catches were found significant positive correlation with maximum temperature and evaporation.

Acknowledgement

This research was supported by Department of Entomology, JNKVV, Jabalpur. We are thankful to our colleagues Mr. Anil Kurmi who provided expertise that greatly assisted the research, although they may not agree with all of the interpretations provided in this paper.

We are also grateful to Dr. A.K. Sharma for assistance with research and analysis who moderated this paper and in that line improved the manuscript significantly. We have to express out appreciation to the Dr. A. K. Bhowmick for sharing their pearls of

wisdom with us during the course of this research.

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How to cite this article:

Yogendra Kumar Mishra, A.K. Sharma, A.K. Bhowmick, A.K. Saxena and Anil Kurmi. 2019. Seasonal Incidence of Insect Pest Species of Paddy Collected through Light Trap. *Int.J.Curr.Microbiol.App.Sci.* 8(04): 381-393. doi: https://doi.org/10.20546/ijcmas.2019.804.042