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Determination of insect faunal diversity through light trap catches at Raipur, Chhattisgarh during *kharif* 2018

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Abstract

The experiment on Determination of insect faunal diversity through light trap catches was conducted during the *kharif*, 2018-19, at the Instructional research farm of IGKV, Raipur, Chhattisgarh. Investigations were undertaken to know the species composition of insect fauna attracted towards the light trap. The most dominated order in the light trap catches during *kharif* season was Coleoptera followed by Hemiptera, Lepidoptera, Hymenoptera, Orthoptera, Dermaptera and Ephemeroptera. According to the percentage of insects collected, maximum number of Coleoptera 3185.96 (68%) which were recorded highest during the 35th SMW, followed by Hemiptera 867.14 (19%) being highest during the 46th SMW, Lepidoptera 316.63 (7%) with peak during the 40th SMW, Hymenoptera 156.36 (3%) highest in the 33th SMW, Orthoptera 66.00 (2%) highest in the 31st SMW and Dermaptera 55.30 (1%) highest during the 34th SMW, Odonata (5.61) highest during the 36th SMW and Ephemeroptera (5.16) highest in the 37th SMW.

Keywords: Light trap, rice, insect faunal diversity, monitoring, population dynamics

Introduction

Light trap is an ideal tool for monitoring, pest surveillance and minimizing the insect pests damage without any toxic hazards (Sharma *et al.*, 2004)^[4]. 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 and Vaishampayan, 1983)^[5]. Light trap is also useful to know the effect the weather factors on species abundance (Jonason *et al.*, 2014)^[2].

Regular light trap catches are found useful to determine the incidence of insect pests and also helps to study the population dynamics of various insect pests during a particular period. These studies help in planning different strategies of insect pest management and useful in development of forecasting models for the pests. (Xia *et al.*, 1991)^[6].

Material and Methods

A light trap was installed near the paddy field at the Instructional research farm of IGKV Raipur, Chhattisgarh with a 100-Watt ordinary tungsten bulb filament operated for 3 hours from 7 p.m. to 10 p.m. daily during crop season to observe the appearance and disappearance of insect pests. The trapped insects were collected and sorted out in laboratory every day. The collection was kept in killing bottle and then placed on blotting paper and sorted out by brush, needles forceps and lens. Weekly total of daily collections was recorded for determining the seasonal activity of each insect according to standard meteorological weeks (SMW) for determining the Insect faunal diversity at Raipur, Chhattisgarh during *kharif* 2018.



Fig 1: Insect Collection and sorting of insects caught in light trap during *kharif* 2018

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Result

Table 1 represents the total number of insects caught in light trap. According to the percentage of insect collected, the maximum of Coleoptera 3185.96 (68%) highest in 32nd and 33rd SMW, followed by Hemiptera 867.14 (19%) highest in 44, 45 and 46th SMW, Lepidoptera 316.63 (7%) highest in 39 and 40th SMW, Hymenoptera 156.36 (3%) highest in 38 and 39th SMW, Orthoptera 66.00 (2%) highest in 31 and 32nd SMW and Dermaptera 55.30 (1%) highest in 33 and 34th SMW, Odonata (5.61) highest in 36 and 37th SMW and Ephemeroptera (5.16) highest in 33rd and 34th SMW.

The present findings are in match with Dadmal and

Khadakkar (2014) [1] who investigated the species composition of insect fauna attracted towards the light trap at Akola, Maharashtra. Their observations also revealed dominance of order Coleoptera 41.81% and 35.10% during 2011-12 and 2012-13 followed by Hemiptera 16.86% and 21.77% during 2011-12 and 2012-13 and Lepidoptera 12.96% and 12.89% during 2011-12 and 2012-13.

The present findings are also in agreement with Ramamurthy *et al.*, (2010) [3], who mentioned that Coleopterans dominated the catches, followed by Hemipterans, Hymenopterans and Lepidopterans from the catches obtained at the Indian Agricultural Research Institute, New Delhi.



Fig 2: Order wise sorting of different insects collected in light trap during *kharif* 2018

Table 1: Weekly order wise collection of insects in light trap during *kharif* 2018

SMW	Lepidoptera	Coleoptera	Hemiptera	Orthoptera	Ephemeroptera	Hymenoptera	Odonata	Dermaptera
31	6.28	250.23	20.00	20.44	0.00	12.17	0.00	3.00
32	11.57	289.00	52.28	13.57	0.00	20.66	0.00	5.66
33	7.24	297.14	20.57	5.28	0.00	22.78	0.00	5.91
34	9.42	138.56	32.00	3.14	0.00	15.03	0.00	6.95
35	4.85	372.89	23.00	4.71	0.00	6.59	0.00	0.18
36	8.28	281.35	34.66	3.20	0.00	14.60	1.84	5.02
37	15.57	228.07	38.90	3.00	3.15	12.17	1.76	3.19
38	18.41	158.77	37.34	1.00	1.01	10.54	1.01	3.77
39	19.85	213.09	39.56	3.02	1.00	15.61	1.00	2.84
40	34.42	166.00	38.09	2.09	0.00	7.92	0.00	1.05
41	16.28	182.00	38.87	3.00	0.00	6.02	0.00	1.00
42	26.11	150.99	41.15	1.45	0.00	4.11	0.00	2.00
43	27.14	65.02	55.98	1.87	0.00	2.17	0.00	1.94
44	24.71	62.94	57.00	1.66	0.00	2.06	0.00	1.83
45	26.85	61.06	59.00	1.00	0.00	1.19	0.00	2.05
46	20.42	55.01	62.11	0.00	0.00	1.74	0.00	2.94
47	18.85	56.00	56.00	0.00	0.00	0.00	0.00	3.06
48	7.71	58.07	58.72	0.00	0.00	1.00	0.00	1.00
49	6.00	52.00	52.91	0.00	0.00	0.00	0.00	1.91
50	6.67	47.77	49.00	0.00	0.00	0.00	0.00	0.00
Total	316.63	3185.96	867.14	66.00	5.16	156.36	5.61	55.30

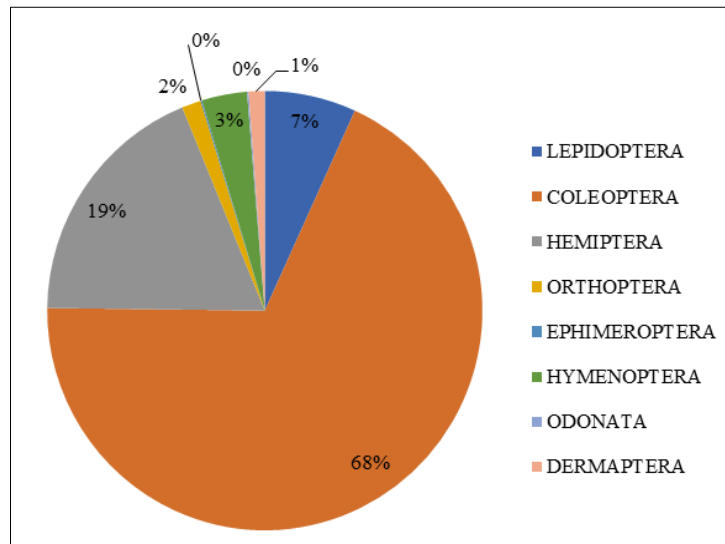


Fig 3: Per cent distribution of insects belonging to different orders collected in light trap during kharif 2018

Conclusion

Thus, the present studies conducted on Determination of insect faunal diversity through light trap catches at Raipur, Chhattisgarh during *kharif* 2018 revealed that the most dominated order in the light trap catches during *kharif* season was Coleoptera followed by Hemiptera, Lepidoptera, Hymenoptera, Orthoptera, Dermaptera and Ephemeroptera.

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