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Seasonal incidence of tea mosquito bug *Helopeltis antonii* Sign in cashew

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Abstract

Field experiment entitled “Efficacy of insecticides against tea mosquito bug, *Helopeltis antonii* Sign. in cashew” was conducted during 2018-19 with nine treatments, replicated thrice, in the farm of Horticulture Section, NARP, Shenda Park, Kolhapur, (Maharashtra) with the objectives to study the seasonal incidence of tea mosquito bug and to study the efficacy of insecticides against tea mosquito bug. The study revealed that the incidence of tea mosquito bug was noticed from first fortnight of November, 2018 with 10.11 per cent infestation which coincided with emergence of new flush. The peak activity was found during first fortnight of February 2019 where 33.75 per cent infestation was recorded. The incidence of tea mosquito bug was significantly and positively correlated with relative humidity-I. However, the incidence of tea mosquito bug was significantly and negatively correlated with maximum temperature and minimum temperature and non-significantly and negatively correlated with rainfall and relative humidity-II.

Keywords: tea mosquito bug, correlation, seasonal incidence

Introduction

In India, more than 180 pests are infesting the cashew including insects, mites and vertebrates, of which 47 species are observed infesting cashew in the Konkan region of Maharashtra (Navik and Godase, 2017) [4]. However, only few of them are considered as the major pests causing considerable damage viz., cashew stem and root borer, *Plocaederus ferrugineus* L., tea mosquito bug, *Helopeltis antonii* Signoret, inflorescence thrips, *Scirtothrips dorsalis* Hood, apple and nut borer (*Nephoteryx* sp.) to cashew in west coast of Maharashtra (Zote *et al.*, 2017) [10]. In cashew, the pest often yield losses to the extent of 30-50 per cent through blossom blight, shoot necrosis and damage to nuts and apples (Srikumar and Bhat, 2013) [8].

Materials and Methods

The present investigation, entitled “Seasonal incidence of tea mosquito bug *Helopeltis antonii* Sign. in cashew” was conducted at the farm of National Agriculture Research Project (NARP), Shenda Park, Kolhapur during 2018-19. The details of the material used and method followed during the course of the investigation are given under the following sub headings.

For recording observations, a block comprising 40 trees of Vengurla-4 was selected. Of which, 10 trees were selected randomly for recording observations on tea mosquito bug. The selected plot was kept unsprayed throughout the study period. For recording observations, ten uniform tender shoots were selected all around four directions (North, East, South and West) randomly on each selected tree and labelled individually. The observations on tea mosquito bug infestation in 0-4 scale were recorded fortnightly on selected shoots/ panicles as suggested by Jalgaonkar *et al.* (2009) [1] with slight modification. The data on seasonal incidence was subjected to correlation and regression analysis to know the effect of weather parameters on tea mosquito bug incidence.

Score Description of the damage

- 0 No lesions / streaks
- 1 1 to 3 necrotic lesions / streaks
- 2 4 to 6 coalescing or non-coalescing lesions / streaks.
- 3 Above 6 coalescing or non-coalescing lesions / streaks.
- 4 Lesions /streaks confluent or wilting affected shoots / panicles.

The data thus obtained were converted into per cent incidence using formula Jalgaonkar *et al.* (2009)^[1].

Correlation with weather parameters like maximum temperature, minimum temperature, morning humidity, evening humidity and rainfall were worked out to know the relationship of pest with these weather parameters.

$$\text{Per cent shoots or panicles damage} = \frac{\text{Sum of all numerical damage score}}{\text{Max. Damage score} \times \text{No. of panicles observed}} \times 100$$

Results and Discussion

The seasonal incidence of tea mosquito bug, *H. antonii* in cashew was recorded from November, 2018 to April, 2019 and presented in Table 1. The result revealed that the incidence of tea mosquito bug was noticed from second

fortnight of November, 2018 which coincided with emergence of new flush with 22.83 per cent shoot damage. The incidence of tea mosquito bug was minimum in the first fortnight of November when the temperature was 31.82 °C and 12.50 °C (maximum and minimum, respectively) with 75.60 per cent relative humidity-I and 51.53 per cent relative humidity-II. The incidence of tea mosquito bug was suddenly raised to 22.83 per cent in second fortnight of November. Further, gradually increased to reach its peak with 33.75 per cent in first fortnight of February when maximum and minimum temperatures were 30.45 °C and 13.9 °C respectively. However the incidence was gradually declined to 11.61 per cent in first fortnight of April. Then, suddenly dropped to 5.50 per cent in second fortnight of April.

Table 1: The seasonal incidence of tea mosquito bug, *H. antonii* and weather parameters (2018-2019)

Fortnight	Percent Shoot Damage	Rainfall(mm)	Maximum Temperature (°C)	Minimum Temperature (°C)	Relative Humidity-I (%)	Relative Humidity-II (%)
Nov – I	10.11	8.40	31.82	12.50	75.60	51.53
Nov – II	22.83	16	30.50	12.10	69.60	54.13
Dec – I	23.63	0	30.09	12.42	72.66	58.73
Dec – II	24.30	0	26.48	15.63	78.62	48.18
Jan – I	29.96	0	29.93	14.53	68.46	38.33
Jan – II	35.66	0	29.67	14.70	76.12	36.54
Feb – I	33.75	0	30.45	13.90	71.40	34.80
Feb – II	29.13	0	34.10	15.17	70.38	33.30
Mar – I	21.11	0	34.32	14.85	68.80	29.86
Mar – II	16.44	2	36.88	18.37	60.43	29.93
April – I	11.61	0.80	37.87	18.90	65.6	43.20
April – II	5.50	0.40	38.25	21.34	64	47.66

The present results are in conformity with the findings of Kar and Poduval (2016) they reported that the pest incidence was observed with vegetative flush before panicle emergence during December and peak infestation was observed during January - February causing, on an average, 17.8% damage to crop and goes down with the onset of summer. These results are also in conformity with Zoteet *et al.*, (2016)^[9] they found that the pest was noticed from December to April and most active in the period of February and March.

The correlation studies indicated that the weather parameters *viz.* rainfall ($r = -0.20$), maximum temperature ($r = -0.74$), minimum temperature ($r = -0.58$) and relative humidity-II ($r = -0.26$) were negatively correlated with the incidence of tea mosquito bug. On other hand the relative humidity-I ($r = 0.51$) positively correlated with the seasonal incidence of tea mosquito bug. However, maximum temperature, minimum temperature and relative humidity-I were significantly correlated and other parameters were non-significantly

correlated to weather parameters. These results are in more or less agreement with Kar and Poduval (2016) they stated that incidence of tea mosquito bug was negatively correlated with most of the weather parameters and Zoteet *et al.*, (2017a)^[10] reported the negative correlation with minimum temperature. The results on correlation studies are more or less harmony with Siswantoet *et al.*, (2008) reported the negative correlation of damage with rainfall, Sahu et *al.*, (2015) revealed the positive correlation with maximum and minimum temperatures whereas negative correlation with morning and evening relative humidity, Mohite, (2017) reported the positive correlation with temperature and negative with humidity and rainfall, Niralaet *et al.*, (2019) concluded the positive correlation with maximum temperature and negative correlation with morning relative humidity (significantly) and minimum temperature, wind velocity, evening relative humidity and rainfall (non-significantly).

Table 2: Coefficient of correlation between incidence of tea mosquito bug, *H. antonii* and weather parameters

Name	Rainfall (mm)	Maximum Temperature (°C)	Minimum Temperature (°C)	Relative Humidity-I (%)	Relative Humidity-II (%)
Coefficient of Correlation	-0.20	-0.74*	-0.58*	0.51*	-0.26

*Significant at 5%

Conclusion

It can be concluded from present investigation that the incidence of tea mosquito was observed from first fortnight of November, 2018 to second fortnight of April, 2019. The peak activity was found during first fortnight of February where 33.75 per cent infestation of tea mosquito bug was recorded. The infestation was coinciding with different phenological stage indicated the management should be beginning of

infestation in October-November and in January. The incidence of tea mosquito bug was significantly and positively correlated with relative humidity-I. However, the incidence of tea mosquito bug was significantly and negatively correlated with maximum temperature and minimum temperature and non-significantly and negatively correlated with rainfall and relative humidity-II

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