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RESEARCH NOTE

Studies on the population dynamics of tea mosquito bug on cashew in Uttara Kannada, Karnataka

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Tea mosquito bug is one of the important pestsattacking severalplantation and fruit crops in the tropics and subtropics. The adult and immature stages of tea mosquito bug (Miridae: Hemiptera) suck the sap from tender shoots, leaves, floral branches, developing nuts and fruits resulting in necrotic lesions. It multiplies rapidly under congenial climatic conditions and preferable stages on the host plant. The introduction of new genotypes and climatic variations paved way for increased incidence and intensity of pest problems in cashew *viz*., tea mosquito bug (*Helopeltis* spp.), stem and root borer, apple and nut borer, shoot and blossom webber, mealy bug, leaf miner, *etc.* as economic threat in recent years. Present study conducted on the population dynamics of cashew tea mosquito bug at Malagi, Mundagod Tq. started appearing from the I FN of November (0.30 bugs/20 shoots), reached peak during the second fortnight of December (6.20 bugs/20 shoots) and started to decline thereafter. Also, incidence of tea mosquito bug was negatively correlated with all the weather parameters except minimum temperature which showed highly significant relationship with the population of tea mosquito bug.

Keywords: Cashew, *Helopeltis* spp., Population, Malagi, Tea mosquito bug

Cashew (*Anacardium occidentale* L.) is a major plantation crop cultivated mainly in tropical and subtropical regions. India occupies the largest area under cashew plantations (20 %) and earning foreign exchange of over ₹ 5000 Crores per annum through the export of cashew kernels and cashew nut shell liquid (Saroj *et al.,* 2016). Cashew is attacked by many insect pests *viz*., tea mosquito bug, *Helopeltis antonii* (Signoret), *Helopeltis bradyi* (Waterhouse); stem and root borer, *Plocaederus ferruginous* (Linn.); apple and nut borer, *Thylocoptilla panrosema* (Meyrick); shoot and blossom webber, *Lamida moncusalis* (Walker); mealy bug, *Ferrisa virgata* (Cockerell); leaf miner, *Acrocercops syngramma* (Meyrick) *etc.* Among these insects, tea mosquito bug , *Helopeltis* spp. (Miridae: Hemiptera) has become a greater threat to the cashew cultivation. About 30 per cent of losses in yield are alone due to tea mosquito bug (Naik *et al*., 2015). This is most devastating pest of cashew damaging tender shoots, inflorescences and immature nuts at various stages of development. The adult and immature stages of tea mosquito bug (TMB) suck the sap from tender shoots, leaves, floral branches, developing nuts and apples resulting in necrotic lesions. The failure to control them in right time was reported to cause yield loss to the tune of 100 per cent under severe outbreak situation (Sundararaju and Sundarababu, 1999).

The experiment was conducted in the Farmer's field at Malagi village (Lat : 14.752695, Long: 75.010796, Ele: 679.97), Mundagod taluk of Uttara Kannada district with Vengurla-4 variety from October 2019 to April 2020. The observations were recorded during the morning hours as the pest hides in between leaves during noon hours. Each cashew tree was divided into four quadrants east, west, north and south. Further, in each quadrant five shoots were randomly selected for observations. From each tree 20 fresh shoots, panicles and fruits were observed depending on the crop phenology. The observations were recorded on the number of tea mosquito bugs inclusive of both adults and nymphs and expressed as numbers per 20 shoots or panicles or fruits with crop. Further to study the various weather parameters on the incidence of tea mosquito bug, the fortnightly interval meteorological data was collected from the Gramin Krishi Mausam Seva at ICAR Krishi Vigyan Kendra, Uttara Kannada, Sirsi. The data were subjected to statistical analysis and using SPSS software correlation coefficient was worked out.

Table 1. Population of tea mosquito bug, *Helopeltis* spp. in four quadrants of cashew plant at Malagi, Uttara Kannada from October to April

Month (2019-20)	No. of TMB /20 shoots/panicles/fruits				Total no of	Cashew Phenology
	East	West	North	South	TMB / Tree	
I FN October	0.00	0.00	0.00	0.00	0.00	Flushing
II FN October	0.00	0.00	0.00	0.00	0.00	
I FN November	0.00	0.30	0.00	0.00	0.30	
II FN November	0.00	1.30	0.90	0.50	2.70	
I FN December	0.40	1.70	1.00	0.60	3.70	
II FN December	1.00	2.20	2.10	0.90	6.20	
I FN January	0.80	1.70	1.70	0.80	5.00	Flowering
II FN January	0.70	1.20	1.10	0.50	4.20	
I FN February	0.40	1.00	0.90	0.40	3.60	
II FN February	0.30	0.60	0.80	0.30	2.80	
I FN March	0.10	0.20	0.30	0.30	0.90	Fruiting
II FN March	0.00	0.10	0.00	0.10	0.20	
I FN April	0.00	0.00	0.00	0.00	0.00	
II FN April	0.00	0.00	0.00	0.00	0.00	
Quadrants mean ± SD	0.27±0.35	0.80 ±0.70	0.69±0.73	0.34±0.32		

The TMB population was first observed during the first fortnight of November with very low density (0.30 bugs/20 shoots), while the increasing trend was observed in the population from the second fortnight of November (2.70 bugs/ 20 shoots). The population reached its peak during the second fortnight of December (6.20 bugs/20 shoots) and started to decline thereafter. All the four weather parameters registered a negative correlation with TMB population on cashewe at Malagi, Mundagod Tq. Uttara kannada, Karnataka and was highly significant only with minimum temperature (r = -0.698). Relative humidity (r = -0.379), rainfall (r = -0.429) and maximum temperature (r = -391) showed negative correlation.

TMB population started increasing gradually from November II FN to 2.70 bugs/20 shoots. The population reached its peak during the 2nd FN (flushing stage) of December (6.20 bugs/20 shoots) thereafter the population was decreased and attained nil from 1st FN of April, which might be due to non-availability of preferred stage of host plant and the prevalence of relatively higher temperature might be less favourable for the survival of the pest.The present findings are in agreement with the study conducted by the Bhaskar *et al.* (2015) who reported that, peak population of TMB was noticed in December month which was coincides with the high level of flushing. Minimum temperature (-0.69) showed highly significant negative relationship with the population of TMB. The results of the present study are in accordance with the findings of Navik and Godase (2017) who observed negative correlation with the maximum temperature (-0.16), relative humidity (-0.67) and rainfall (-0.34) and highly significant negative correlation of minimum temperature (-0.78) with TMB population.

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