



## Effect of tea mosquito bug, *Helopeltis Antonii* sign damage on yield performance of cashew varieties

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### Abstract

Tea-mosquito bug (TMB), *Helopeltis antonii* Sign. Is an important pest of cashew which is one of the reasons attributed to the drastic decline in cashew production with the yield loss upto 40 to 50 per cent and in some situations up to 100 per cent? In the present study, effect of Tea-mosquito bug damage on yield and yield attributing characters viz, flushs and panicle of cashew were studied by selecting 25 cashew genotypes from the core population of 64 germplasm accession at Agricultural and Horticultural Research Station, Ullal. The tree canopy extended more in East-west side compared to North-South side and Tea-mosquito bug damage was recorded higher in western side compared to southern side of the trees. The yield of cashew trees 10-15 per cent and damage by 85-100 per cent with respect to age of the trees. The late harvest varieties are less damage compared to early harvest varieties. It is revealed from the present study that, Ullal-1, Ullal-2, UN-50, Vengurla-4 and V.R.I.-3 are showing better resistance to Tea Mosquito bug damage in coastal Karnataka.

**Keywords:** cashew, tea-mosquito bug, canopy, resistant.

### Introduction

Cashew (*Anacardium occidentale* L.) is native of Brazil and has attained an important position among plantation crops in India. It is a major dollar earning horticultural crop grown all over the world and considered as suitable for soil conservation, afforestation and also wasteland development. Presently, commercial cultivation of cashew has started in warm humid climates across the globe in Vietnam, India, Brazil, Nigeria, Tanzania, Mozambique, Guinea, Cote ivory, Ghana and Indonesia are the top producers of cashews amongst the 23 cashew producing countries. In India, cashew is mainly grown in Kerala, Karnataka, Goa and Maharashtra along the west coast, Tamil Nadu, Andhra Pradesh, Odisha and West Bengal along the east coast. In India, cashew is cultivated in an estimated area of 10.62 lakh hectares with the production and average productivity of 8.18 lakh tons. And 753 kg per hectare, respectively [1]. Cashew nut is one of the important nuts grown in the world and ranked first. Among various nuts such as hazelnuts, almonds, etc, cashew nut enjoys an unenviable position and it is an unavoidable snack in all important social functions especially in the western countries. Tea-mosquito bug is a pest which affects flush, flower and button nut stages of the crop leading to huge crop loss.

At present the pest is managed by using three to four sprays of different insecticides on cashew crops. In spite of wide availability of cashew germplasm in India, the use of resistance cashew plant to manage this pest problem has not been explored fully. In earlier field screening studies with the cultivars and the seedling progenies, cashew types with least susceptibility to tea mosquito bug have been reported [2, 3].

Considering Tea Mosquito bug severe damage on cashew in coastal Karnataka during 2018-19 and the problems faced by the farmers for management of tea mosquito bug by the use of insecticides, it is need to identify the suitable resistance cashew cultivars against Tea Mosquito bug for large scale multiplication of cashew varieties and to get good yield by avoiding damage. Hence this study was conducted.

### Materials and methods

The material for the present study comprised of 25 cashew genotypes selected from the core population of 64 germplasm accession (Table 1). All the selected 25 varieties were screened to find out the resistance or tolerance variety/cultivars in the 20 year old cashew orchard at Agricultural and Horticultural Research Station, Ullal. The experiment was laid in Randomized Complete Block Design and same agronomic practices were given to all the varieties.

The pest damage was observed randomly at weekly intervals for the presence of tea mosquito bug during crop period and its feeding damage by recording observations. Canopy covering in North, South, East and West side, new flush, panicle, nut yield and Tea Mosquito bug damage on East, North, West and South side of the trees were also recorded.

The Tea-mosquito bug damage was represented in percentage basis. The temperature (18-34°C), Relative humidity (60-90%) and Rain fall (2800mm-3000mm) data also recorded. The data collected on different trees were statistically analysed using the standard procedure and the result were tested at 5 per cent level of significance by using web Agristat package developed by ICAR Goa.

**Table 1:** List of cashew varieties/ cultivars selected for the study

Sl. No.	Types	Varieties/Cultivars	Sl. No.	Types	Varieties/Cultivars
1	T1	Ullal-1	14	T4	Hy. 40 MOZ x 1/63
2		Ullal-2	15		1/3 Ullal
3		Ullal-3	16		C.R.S. 1
4		Ullal-4	17		7/69 Ichapur
5	T2	UN-50	18		Brazil
6		1/40 Palparamba	19		9/10 Permannur
7		4/6 Madhuranthakam	20		B.P.P-8
8		9/66 Chirala	21		Vengurla-7
9		3/111 Gubbi	22		V.R.I.-3
10		7/ 91 Kottarakara	23		Priyanka
11	T3	Nairobi	24	T5	Local (Puttur)
12		8/103 Gubbi	25		Vengurla -4
13		Propagation			

**Results and discussion**

The observations recorded on different parameters viz, number of new flush, panicle, nut yield and Tea-mosquito bug damage on East, North, West and South side of different varieties/ cultivars are shown in the table 2 and 3. The Tea-mosquito bug damage on number of flushes, panicles and nuts were highest in T5 cashew varieties and lowest in T1 cashew varieties in eastern side of the cashew trees, ie, Tea mosquito bug damage was recorded highest in T5 group of cashew trees with respect to panicle, nut yield. In northern side, highest damage on flushes recorded in T4 cashew plants and highest bug damage was noticed in panicle, flushes and nut yield when compared to eastern side (Table 2). In western side, Tea Mosquito bug damage was the highest on number of new flushes, panicles and nuts were recorded in T2 compared to all others and lowest damage were recorded in T5. Same trend also followed in tea mosquito bug symptoms also. Whereas in southern side, highest damage on flushes, panicles and nuts were recorded in T2 varieties but the tea mosquito damage was recorded highest in T1 cashew varieties. In south side of cashew trees, flushes are less compared to western side. Tea mosquito bug damage was recorded higher in western side compared to southern side of the trees. (Table 3). The damage on tree canopy extended more in north-south

Side compared to east-west side. The yield of cashew trees 10-15 per cent with respect to age of the trees. Tea mosquito bug damage is height on old plantation. It is revealed from the present study that, Ullal-1, Ullal-2, UN-50, Vengurla -4 and V.R.I.-3 are showing better resistance to Tea-mosquito bug damage in coastal Karnataka (Table 4). These results are in accordance with the earlier findings [4] which has recorded the maximum per cent infestation in Local Puttur and Hy. 40 MOZ (3.11%) followed by 30/1 (2.99%). The present results were conformity with the previous findings [5] which has reported that, variety Ullal-1 is moderately resistant to Tea Mosquito bug but in contradictory in case of Madhuranthakam, which was found flushing and flowering early, hence they escape from the Tea-mosquito bug infestation.

**Conclusion**

The present study showed that five group of cashew trees of 25 cashew varieties are damaged by Tea-Mosquito bug With respect to yield, flushes and in canopy spread. The old Trees were more damage by Tea-mosquito bug compared to younger trees. Late harvest varieties are less damage compared to early harvest varieties. In higher temperature (24-34°C), Tea-mosquito bug damage lower compared to low temperature (18-22°C).

**Table 2:** Tea Mosquito bug damage on flushing, flowering and nut yield of cashew varieties.

Parameters	a) Eastern Side					b) Northern Side				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
No. of flushes/ sq. cm	20.60(4.59)	20.00(4.94)	20.80(4.61)	28.80(5.41)	31.00(4.52)	20.00(4.52)	22.00(4.74)	25.40(5.08)	31.00(5.61)	18.40(4.34)
No. of panicles/ sq. cm	1.00 (1.22)	2.00 (1.58)	3.20 (1.92)	4.00(2.12)	1.00(1.22)	1.00(1.22)	2.40(1.70)	3.80(2.07)	4.40(2.22)	4.60(2.25)
No. of nuts/ sq. cm	3.40 (1.97)	4.00 (2.12)	4.01 (2.12)	3.80(2.07)	8.00(2.91)	2.00(1.58)	5.00(2.34)	6.01(2.55)	4.00(2.12)	3.21(1.92)
Tea Mosquito bug damaged (No. of flushes affected/ sq. cm)	18.40(4.34)	21.80(4.72)	18.42(4.34)	22.01(4.74)	25.00(5.04)	19.60(4.48)	17.20(4.20)	22.61(4.80)	26.03(5.15)	19.80(4.50)
S. Em(±)	0.93					1.11				
CD(P=0.05)	2.80					3.41				
CV (%)	15.63					18.5				

\*T- Tree type

**Table 3:** Tea Mosquito bug damage on flushing, flowering and nut yield of cashew varieties.

Parameters	c) Western Side					d) Southern Side				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
No. of flushes/ sq. cm	27.80(5.31)	30.00(5.52)	23.80(4.92)	25.41(5.09)	20.61(4.59)	18.42(4.34)	23.80(4.92)	20.01(4.52)	20.60(4.59)	22.00(4.74)
No. of panicles/ sq. cm	3.41(1.97)	6.20(2.58)	2.00(1.58)	3.81(2.07)	1.22(1.31)	1.80(1.51)	4.81(2.30)	1.22(1.30)	1.11(1.26)	2.40(1.70)
No. of nuts/ sq. cm	3.43(1.98)	6.20(2.58)	2.01(1.58)	3.80(2.07)	1.22(1.31)	3.20(1.92)	5.00(2.34)	2.32(1.67)	3.33(1.94)	5.00(2.34)
Tea Mosquito bug damaged (No. of flushes affected/ sq. cm)	22.80(4.82)	25.40(5.08)	17.60(4.25)	22.00(4.58)	17.00(4.18)	20.00(4.52)	13.80(3.78)	20.40(4.57)	18.51(4.35)	17.20(4.20)

cm)									
S. Em( $\pm$ )	0.92				0.94				
CD(P=0.05)	2.02				2.88				
CV (%)	10.12				18.20				

\*T- Tree type

**Table 4:** Effect of Tea mosquito bug damage on canopy and yield performance of Cashew tree

Parameters	T1	T2	T3	T4	T5
North- South canopy (m)	3.00(1.87)	3.50(2.00)	3.00(1.87)	3.00(1.87)	3.75(2.06)
East- West canopy (m)	3.00(1.87)	3.75(2.06)	3.50(2.00)	3.25(1.93)	4.00(2.12)
Yield (Kg/tree)	1.00(1.22)	1.00(1.22)	0.50(1.00)	0.50(1.00)	0.25(0.86)
	1.50(1.41)	1.00(1.22)	0.50(1.00)	0.75(1.11)	1.00(1.22)
	2.00(1.58)	1.20(1.30)	0.80(1.14)	0.25(0.86)	0.50(1.00)
	1.50(1.41)	0.75(1.11)	0.25(0.86)	1.00(1.22)	0.30(0.89)
S. EM ( $\pm$ )	0.13				
CD(P=0.05)	0.41				
CV (%)	16.30				

\*T- Tree type

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