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Cashew varietal screening for resistance against tea mosquito bug, *Helopeltis antoni* Sign

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Abstract
In cashew one of the reasons attributed to the drastic decline in production is the occurrence of tea mosquito bug (TMB), *Helopeltis antonii* Sign. which causes yield loss upto 40 to 50 per cent and in some situations 100 per cent reduction in yield in coastal region. Integrated pest management involving resistance and adopting spraying of insecticides is a good package to manage this pest and reduce the insecticidal applications. With this background varietal screening of cashew cultivars to tea mosquito bug was taken up at Agricultural and Horticultural Research Station, Ullal. The variety Ullal-1 recorded lowest TMB damage (61.85%) followed by C.R.S-1(69.10%). Whereas the maximum per cent damage was recorded in Hy.40 MOZ*1/63(98.90%), 3/111 Gubbi (98.40%), 4/6 Madhuranthakam (97.55%) and Local Puttur (97.10%). However, none of the yielding cultivars has shown resistant reactions to TMB infestation.

Keywords: Cashew, TMB, varietal screening, resistant

1. Introduction
Cashew (*Anacardium occidentale* L.) is one of the important nut crop and a major dollar earning horticultural crop. It is native of Brazil and has attained an important position among plantation crops in India. It was considered as a suitable crop for soil conservation, aforestation 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. The estimated area under cashew in India is 10.62 lakh hectares and the production is around 8.18 lakh tons. The national average productivity is 753 kg per hectare [2]. 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. Inspite of all those value Tea Mosquito bug pest in flushy, flower and button nut stages.
At present the pest is managed by using three to four sprays of different insecticides. In spite of wide availability of cashew germplasm in India the use of host plant resistance 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 [1, 3].
Considering Tea Mosquito bug severe damage in coastal Karnataka during 2018-19 and the problems faced by the farmers for management of tea mosquito bug by the excessive use of insecticides, it is need to identify the suitable tolerant/ resistance for large scale multiplication of cashew varieties. Hence this study was conducted.

2. Materials and methods
The material for the present study comprised of 25 cashew genotypes selected from the core population of 64 germplasm accession. 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 and its feeding damage by recording observations canopy covering North, South, East and

West side flushy, panicle, nut yield and Tea Mosquito bug damage on East, North, West and South side were estimated.
The T-Mosquito bug damage was represented in percentage basis. The temperature (18-34 ºC), Relative humidity (60-90%) and Rain fall (2800mm-3000mm) data also recorded in every year. 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 agri stat package developed by ICAR Goa.

3. Results and discussion

After twenty years of planting the varieties showed different level of tolerance to TMB. The highest per cent damage was observed in the variety/ cultivars Hy.40 MOZ *1/63(98.90%), 3/111 Gubbi (98.40%), 4/6 Madhuranthakam (97.55%) and Local Puttur (97.10%) were shows more than 97 per cent crop damage and were found be most susceptible to cashew Tea mosquito bug, which were followed by the cultivars Nairobi (95.85%), 7/91 Kottarakara (95.10%), Ullal-4(92.68%) and Priyanka (92.45%). Remaining verities/ cultivars were also damaged by this pest whereas, showed comparatively lesser per cent damage. Whereas, the least per cent damage was recorded in the cultivar Ullal-1 with 61.85 per cent compared to other cultivars and emerged as a tolerant/ resistant cultivars among the selected verities which was followed by the C.R.S-1(69.10%) (Table 1).
These results are in supported 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 results of previous study [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 TMB infestation.

Table 1: Tea Mosquito bug damage on indigenous/exotic types of cashew varieties

Sl. No.	Variety\cultivars	Per cent TMB damage
1	Ullal-1	61.85(51.85)^{a}
2	Ullal-2	78.63(62.46)^{ab}
3	Ullal-3	86.39(68.35)^{b}
4	Ullal-4	92.68(74.30)^{cd}
5	UN-50	73.26(58.86)^{b}
6	1/40 Palparamba	85.50(67.61)^{c}
7	4/6 Madhuranthakam	97.55(80.99)^{d}
8	9/66 Chirala	84.70 (66.97)^{c}
9	3/111 Gubbi	98.40(82.73)^{d}
10	7/91 Kottarakara	95.10(77.21^{cd}
11	Nairobi	95.85(78.24)^{cd}
12	8/103 Gubbi	79.40(63.00)^{ab}
13	11/6 Goa	86.60(68.52)^{c}
14	Hy.40 MOZ ×1/63	98.90(83.97)^{c}
15	1/3 Ullal	81.50(64.52)^{c}
16	C.R.S.1	69.10(56.22)^{a}
17	7/69 Ichapur	82.20(65.04)^{c}
18	Brazil	92.90(74.54)^{cd}
19	9/10 Permannur	86.20(68.19)^{c}
20	B.P.P-8	91.70(73.25)^{c}
21	Vengurla -7	90.00(71.56)^{c}
22	V.R.I-3	73.41(58.95)^{b}
23	Priyanka	92.45(74.05)^{cd}
24	Local (Puttur)	97.10(80.19)^{d}
25	Vengurla -4	75.01(60.00)^{ab}
	S. Em(±)	2.36
	CD(P=0.05)	7.10

4. Conclusion

Present study revealed that, by comparing the per cent Tea mosquito bug damage among the selected 25 varities in the 20 year old orchard, the cultivar Ullal-1 which shows lower per cent of TMB damage among the tested cultivars which was found to be flushing and flowering late, hence they escape from the TMB infestation. Thus there is no single accession/entry available resistant/tolerant to TMB infestation. In the earlier field screening trials also all the tested cashew accessions were reported to be susceptible to TMB through the intensity of infestation varied significantly

5. References

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