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Efficacy of newer insecticides against tea mosquito bug in cashew *Helopeltis antonii* Sign in Konkan region of Maharashtra

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Abstract
Cashew tea mosquito bug (*Helopeltis antonii* Sign) is one of the most important pests of cashew in Maharashtra. The experiments were conducted at Regional Fruit Research Station, Vengurle, (MS) to find out the most effective insecticide for the management of tea mosquito bug in cashew. The results revealed that among the different insecticides tested the Buprofezin 25 SC @ 3ml/lit was found the best insecticide for the management of tea mosquito bug as it recorded the least incidence (3.04%) followed by the university recommended spray schedule of the region (3.30%).

Keywords: Cashew tea mosquito bug, chemical management, buprofezin, *Helopeltis antonii*

Introduction
Cashew is one of the important commercial crops in India. In Konkan region of Maharashtra; it is cultivated on an area of 1.83 lakh ha. The production and productivity of cashew is influenced by many factors, among them insect pest is one of the major. Around 180 species of insect and non-insect pests have been reported infesting cashew in India resulting in substantial yield losses (Sundararaju, 1993) [8]. Out of these the tea mosquito bug (*Helopeltis antonii*), stem and root borer (*Plocaederus ferrugineus*), inflorescence thrips (*Scirtothrips dorsalis*), apple and nut borer (*Nephopteryx* sp.) etc. are considered to be the major pests of cashew in West Coast of Maharashtra (Godase *et al*., 2004) [5] .The tea mosquito bug (*Helopeltis antonii*) is the most important pest of cashew causing yield losses by damaging tender shoots, inflorescences and immature nuts at various stages of development (Devasahayam,1986) [4].It is estimated that the average damage to tender shoots is to the extent of about 25 percent and to tender nuts it is 15 percent, whereas, when floral branches are infested it results in inflorescence blight which accounts for about 30 percent losses (Abraham, 1958) [1]. The tea mosquito bug alone has a potential to cause 40 to 50 percent yield losses in cashew and in severer out break the pest causes yield losses up to 100 percent (Annonymous, 1998) [3].

Chemical management is the most easy and cheapest method for management of tea mosquito bug in cashew. Several scientists reported efficacy of different insecticides for management of tea mosquito bug in cashew. The synthetic pyrethorids viz., Permethrin (0.1%) cypermethrin (0.0075%) decamethrin (0.0025%) and fenvelerate (0.01%) are found effective for the management of tea mosquito bug (Godase *et al*., 2004) [5] .With the intention to reduce the number of sprays and to find out the most effective insecticide for the management of tea mosquito bug in cashew the experiment was conducted at Regional Fruit Research Station Vengurle.

Methodology
The present studies were carried out to find out the effective insecticide against tea mosquito bug. There were eight different treatments statistically fitted in Randomized Block Design with three replications. The treatment details are as fallow.

Tr. No	Details
T_1	Emamectin Benzoate 5 SG @ 0.2 g/lit
T_2	Diclorvos76 EC @ 0.6 ml/lit
T_3	Acetamiprid 20 SP @ 0.5 g/lit
T_4	Flonicamid 50 SG @ 0.3g/lit
T_5	Deltramethrin 2.8 EC @ 0.9 ml /lit
T_6	Recommended Spray schedule (Monocrotophos 36SL @1.5ml/lit at flushing stage, Profenophos 50 EC @ 1ml/lit at flowering, Lambda cyhalothrin 5 EC @ 0.6ml/lit)
T_7	Buprofezin 25 SC @ 3ml/lit
T_8	Untreated control

Spray schedule

First spray – At flushing stage

Second spray – At panicle initiation stage

Third spray **–** At pea nut stage

To record the incidence of tea mosquito bug 52 leader shoots were selected at four side of canopy and labeled individually. Pretreatment observations were recorded one day prior to each spray whereas; the post treatment observations were recorded one month after each spray. The extent of damage to the shoots and panicles was scored in 0-4 scale on the basis of the number and nature of necrotic lesions (Ambika *et al*., 1979) [2] as given below.

0	No damage
1	1 to 3 necrotic streak/lesion on the shoot /panicle including apple and nut
2	4 to 6 necrotic streak/lesion on the shoot /panicle including apple and nut
3	Above six coalescing or non-coalescing lesions/streaks on shoots/ panicles including apple and nut
4	Lesions /streaks confluent or wilting or drying of affected shoots/ panicles including apple and nut

The data thus recorded were converted into percent incidence by using the formula given below

$$\textbf{\%incidence} = \frac{\text{Sum of numerical rating}}{\text{No. of shoots observed x maximum rating}} \times 100$$

The data thus obtained were converted in to arcsine transformation.

Table 1: Efficacy of insecticides against tea mosquito bug in cashew.

Treatment		Per cent incidence of TMB 30 days after each spray			
		I st Spray	II nd Spray	III rd Spray	Mean
T_1	Emamectin Benzoate 5 SG @ 0.2 g/lit	5.28(13.21)*	6.24(14.40)	6.24(14.19)	5.92(13.93)
T_2	Diclorvos76 EC @ 0.6 ml/lit	3.68(10.94)	6.24(14.42)	5.76(13.89)	5.22(13.08)
T_3	Acetamiprid 20 SP @ 0.5 g/lit	3.04(9.90)	6.40(14.59)	5.28(13.21)	4.90(12.56)
T_4	Flonicamid 50WG @0.3g/lit	3.84(11.22)	5.76(13.82)	6.88(14.91)	5.49(13.31)
T_5	Deltramethrin 2.8 EC @ 0.9 ml /lit	1.92(7.87)	3.52(10.68)	4.96(12.80)	3.46(10.45)
T_6	Recommended Spray schedule (Monocrotophos, Profenophos, Lambda cyhalothrin)	3.04(9.92)	3.20(10.20)	3.68(10.98)	3.30(10.36)
T_7	Buprofezin 25SC @3ml/lit	5.60(13.62)	1.44(6.71)	2.08(6.59)	3.04(8.97)
T_8	Untreated control	8.65(17.05)	11.53(19.82)	10.24(18.92)	10.14(15.70)
S.Em		0.530	0.604	0.828	1.22
CD at 5%		1.60	1.83	2.51	3.72

*****Figure in parenthesis are arcsine value

Result and Discussion

The data on efficacy of different treatments against tea mosquito bug are presented in Table1. From the data it is revealed that all the insecticide treatments were significantly superior over control during all the observations. After first spray, the treatment of deltramethrin 2.8 EC @ 9 ml/lit was found most effective (1.92% incidence) which was significantly superior over rest of the treatment. However, after 2nd and 3rd spray the treatment of buprofezin 25 SC @ 3 ml/lit was found most effective with only 1.44 and 2.08 percent incidence of tea mosquito bug, respectively and it was found significantly superior over rest of the treatment. From the mean data of three sprays it is revealed that the treatment of Buprofezin 25 SC @ 3ml/lit was found most effective for the management of tea mosquito bug with only 3.04 percent incidence of tea mosquito bug, however, it was at par with the treatment of recommended spray schedule (3.30%), deltramethrin (3.44%), acetamiprid (4.90%) and diclorvos (5.22%).

Thus, it can be concluded that the insecticide buprofezin 25 SC @ 3 ml/lit is most effective for management of cashew tea mosquito bug.

Discussion

In the present study, from the mean data it was observed that the insecticide buprofezin 25 SC @ 3ml/lit was found most effective for the management of cashew tea mosquito bug, however, it was at par with the already recommended schedule (Monocrotophos 36SL @1.5ml/lit at flushing stage, Profenophos 50 EC @ 1ml/lit at flowering, Lambda cyhalothrin 5 EC @ 0.6ml/lit), deltamethrin, acetamiprid and diclorvos. These results are more or less in agreement with Godase *et al*. (1992) [6], who reported the efficacy of three sprays comprising of monocrotophos, endosulfan and carbaryl. Whereas Jalgaonkar *et al*. (2015) [7], and Zote *et al.*

(2016) [9] reported lambda cyhalothrin as most effective insecticide against cashew tea mosquito bug. Similarly the efficacy of Lambda cyhalothrin (0.6ml/lit) was also presented by Bhat and Raviprasad. (2009) [4], for management of tea mosquito bug.

References

1. Abraham EV. Pest of cashew in South India. Indian Journal of Agriculture Science. 1958; 28:531-544.
2. Ambika B, Abraham CC and Vidyadharan KK. Relative susceptibility of cashew type to infestation by *Helopeltis antonii* Sign. (Hemiptera: Miridae) In Proceeding of PLACROSYM-II, Ootacamund, India. 1979; 513-516.
3. Annonymous. All India Coordinated Cashew Improvement Project Annual Report for 1998, NRCC, Puttur, India, 39.
4. Bhat, PS, Raviprasad, TN. Management of Tea mosquito bug, Helopeltis antonii Sign. With newer insecticide/products. Proceeding of National Seminar on Research Development and Marketing of Cashew, 2009, ICAR Research Complex, Goa, 56-60.
5. Devasahayam S, Nair CPR. Tea mosquito bug (*Helopeltis antonii* signoret) on cashew in India. J. Plantation Crops. 1986; 14(1):1-10.
6. Godase SK, Bhole SR, Patil RP, Shivpuje PR and Sapkal BB. Status of Management of insect pests of cashew in Maharashtra. Report Presented in National Group Meeting of Scientists of AICRP on Cashew at NRC for cashew, Puttur, Karnataka, India, 2004.
7. Godase SK, Dumbre RB, and Kharat SB. Evaluation of some insecticides for the control of tea mosquito on cashew. Maharashtra Agric. Univ. 1992; 17(2):219-220.
8. Jalgaonkar VN, Chavan SA, Patil PD and. Naik KV. Evaluation of some newer insecticides for control of tea mosquito bug (*Helopeltis antonii*) in cashew. Acta Horticulture. 2015, 465-467.
9. Sundararaju D. Studies on the parasitoids of tea mosquito bug, *Helopeltis antonii* Sign. (Heteroptera: Miridae) on cashew with special reference to *Telenomus* sp. (Hymenoptera: Scelionodae). J. Biol. Control. 1993; 7(1):6-8.
10. Zote VK, Gajbhyie RC, Salvi SP, Narangalkar AL. Evaluation of insecticide for management of cashew tea mosquito bug in coastal Konkan region of Maharashtra .J. Indian Soc. Coastal Agric. Res. 2016; 34(2):61-64