



Biology of Tea Mosquito Bug, *Helopeltis antonii* Signoret in *Moringa olifera*

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Abstract: Biology of tea mosquito bug, *Helopeltis antonii* Signoret was studied under field and laboratory conditions. The primary survey on incidence of tea mosquito bug in moringa at different locations showed higher incidence of tea mosquito bug s during November, 2019 and till January, 2020 at all locations. The primitive symptom was formation of necrotic lesions on young flush of moringa due to feeding of tea mosquito bug, and on continuous feeding by nymphs and adults of tea mosquito bug wilting of young flush along with gummy exudes occurs. The duration of incubation period, nymphal instars and male and female adult longevity was 5.55, 16.75, 5.16 to 6.65 days of adult longevity (males and females respectively). The total life cycle was 27.45 and 29.20 days for males and females, respectively.

Keywords: Tea mosquito bug, *Helopeltis antonii*, *Moringa olifera*, Symptoms, Biology

Moringa, *Moringa olifera* (Moringaceae) is one of the most important vegetable crop in many of the countries including India, Ethiopia, Phillipines etc. Moringa plants suffer from major pests pod fly, *Gitona distigma*; budworm, *Noorda moringae*; hairy caterpillar, *Eupterote mollifera* etc. (Mridha and Baraka 2017). The tea mosquito bug, *Helopeltis antonii* Signoret (Miridae: Hemiptera) is one of the new pest in Moringa (Aravinthraju et al 2022). Tea mosquito bug was first reported in India at Cachar District of Assam, attacking *Camellia sinensis* (L.) Kuntze (Theaceae) (Aravinthraju et al 2021). After which is co-evolving in the agricultural ecosystem by feeding many tropical hosts like *Psidium guajava* (Lithomyrtus), *Azadirachta indica* (Meliaceae), *Anacardium occidentale* (Anacardiaceae) etc. The present studies on nature of damage and biology of tea mosquito bug in moringa were undertaken.

MATERIAL AND METHODS

Survey: A survey was conducted in moringa fields of Andipatti (9.99508° N latitude, 77.66715° E longitude) and Natham (10.20284° N latitude, 78.15778° E longitude) blocks of Theni and Dindigul districts respectively, Tamil Nadu, India, during 2019-2020. The collection of adults and nymphs were done for mass culturing purpose. The specimens have been maintained in the Department of Entomology, Agriculture College and Research Institute, Madurai.

Mass culturing of tea mosquito bug: Mass rearing methods of tea mosquito bug described by Sundararaju and

John (1992) was followed. Adult and nymphs collected from the moringa fields and released in one month old moringa seedlings kept in the aluminum rearing cage of size 74 X 74 X 74 cm. Three sides and top of the cage were closed and one side was provided with movable lid. The seedlings were replaced once in three days based on feeding punctures and drying of leaves and seedling in adult cage was observed for presence of egg. This mass rearing setup was maintained in normal atmospheric condition under shade at Insectary, Department of Agricultural Entomology, Agricultural College and Research Institute, Madurai.

Biology of tea mosquito bug: Biology of TMB was studied based on the procedure reported by Mohapatra and Satapathy (1999). The adults were released on one month old moringa seedlings and observed regularly for presence of eggs and egg hatching. Moringa seedlings with eggs were isolated in separate cage of size 45 X 45 X 45 cm. Observations on egg hatching, nymph duration, adult longevity, adult sex and female oviposition were made daily. Five replications with five nymphs per replication were maintained for recording observations. The study was carried out in normal atmospheric condition at Insectary, Department of Agricultural Entomology, Agriculture College and Research Institute, Madurai during 2019-2020.

RESULTS AND DISCUSSION

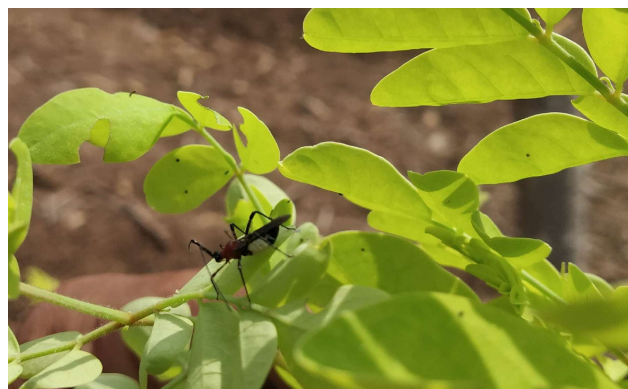
Incidence of tea mosquito bug in moringa: The incidence of tea mosquito bug starts from November, 2019 and continued till January, 2020 at all locations in moringa (Table

Table 1. Survey on the incidence of tea mosquito bug in moringa at different locations

Block	Village	Population (No./ 15 flush)		
		November 2019	December 2019	January 2020
Andipatti	Maravapatti	5.67	9.83	13.17
	Thimmarasanaikanur	6.33	12.83	12.00
Natham	Mulaiyur	4.00	8.00	10.00
	Panniyamalai	5.67	9.67	9.67

Table 2. Biology of tea mosquito bug, *H. antonii* in moringa

Life stages	Duration (Days)*	
Egg period	5.55 ± 1.17	
Nymphal period	I instar	3.29 ± 0.41
	II instar	3.53 ± 0.87
	III instar	3.14 ± 0.36
	IV instar	3.30 ± 0.50
	V instar	3.49 ± 0.23
	Total	16.75 ± 1.13
Adult longevity	Male	5.16 ± 0.74
	Female	6.65 ± 0.68
Total life cycle	Male	27.45 ± 2.09

**Plate 1.** Tea mosquito bug in moringa

1). The incidence ranged was 4.00 and 13.17 bugs/ 15 flush in moringa. The peak incidence of tea mosquito bug in moringa was during January. Kumar et al (2002) and Thirumalaraju (2003) also observed that the tea mosquito bug was active from June to February. But peak incidence was during September to November. Patil and Naik (2010) observed the mosquito bug incidence in guava was at its peak during September (24.3%).

Symptoms of damage: The nymphs and adults suck sap from young shoots of moringa, forming necrotic lesions on shoots. Due to continuous feeding by the bugs the lesions coalesce, result in drying of the whole twigs. The young instars mainly congregate on growing shoot tips, which dry first. Later due to continuous feeding of bugs the whole twig become dry and the leaves will fall off. There were gummy exude on the feeding sites of tea mosquito bug, which will resemble bubbles on the stem. Under severe infestation of bugs, entire leaves will fall off and the plant resembles the snag. In some occasions the bugs will even feed on pods (Plate 1, 2).

Biology of tea mosquito bug: Life cycle of tea mosquito bug consists of an egg stage, five nymphal stages and an adult stage. The egg duration of tea mosquito bug in moringa was as 5.55 days. Eggs are oval with presence of two extra chorionic processes above it. As eggs are inserted inside plant tissues only these two extra chorionic processes are

**Plate 2.** Severe infestation of moringa tea mosquito bug

visible with an eggs exit side over the surface of the plant part. Durations of I, II, III, IV and V instar nymphs were 3.29, 3.53, 3.14, 3.30 and 3.49 days, respectively. The total nymphal duration was 16.75. Early nymphal instars show less movement and hence the congregate on the young twigs, but the later instars spreads actively. The longevity of adult male and female was 5.16 and 6.65 days respectively. Adults are poor flyers, mostly sessile while feeding and oviposition, but escapes actively during disruption. The total life cycle of tea mosquito in moringa was 27.45 and 29.20 days for males and females, respectively (Table 2).

CONCLUSION

Tea mosquito bug in moringa causes severe damage by sucking sap from young flushes, forming necrotic lesions on young shoots. These lesions on continuous feeding coalesce and result in wilting of twigs. The duration of egg and nymphal stage was 5.55 and 16.75 days. The longevity of male and female was 5.16 and 6.65 days. The total life cycle was 27.45 and 29.20 days for males and females, respectively.

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