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OCCURRENCE OF TEA MOSQUITO BUG *HELOPELTIS ANTONII* SIGNORET ON NEEM IN NORTHERN KARNATAKA

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ABSTRACT

Severe incidence of tea mosquito bug *Helopeltis antonii* Signoret (Hemiptera: Miridae) on neem *Azadirachta indica* A. Juss was noticed during 2021-22 in Northern parts of Karnataka. The incidence level (expressed in damage score) varied from 1 to 4 across the surveyed locations, and mean damage score of 3 (25-50% incidence) was observed. Adults and nymphs were found desapping the tender parts of the twigs resulting in black patches and gummosis on the feeding zone initially. Later, affected twigs were found drying along with leaves giving burnt appearance. In this paper, details of survey conducted, different life stages of the pest recorded along with symptoms of damage are discussed.

Key words: *Azadirachta indica*, *Helopeltis antonii*, Tea mosquito bug, neem, margosa, Indian lilac, damage score, survey, incidence, gummosis, life stages, nymph, northern Karnataka.

Azadirachta indica A. Juss commonly known as neem or margosa or Indian lilac is native to Indian subcontinent. It is known to be attacked by 110 insect pest species (Boa, 1995) of which tea mosquito bug (TMB) *Helopeltis antonii* Signoret (Hemiptera: Miridae) was viewed as one of the major sucking pests, affecting tender shoots (Onkarappa, 1993; Boa, 1995). It is a polyphagous pest, known to attack a wide variety of other plant species also such as cashew, guava, mango, apple, rose apple, custard apple, grapevine, ber, cocoa, drumstick, black pepper, cotton, cowpea, cinchona, Singapore cherry, mahogany, heaven tree and Compositae weeds (Saroj et al., 2016). The neem is considered as primary host of *H. antonii* especially in Tamil Nadu, Andhra Pradesh and southern parts of Karnataka (Raviprasad and Vanitha, 2020). Tea mosquito bug as a pest of neem trees in southern parts of India particularly from Coimbatore region was reported by Rao (1915). Likewise, Onkarappa (1993) reported *H. antonii* as a major sucking on pest on neem in southern parts of Karnataka. Thirumalaraj and Puttaswamy (2003) and Kalloor et al., (2020) studied the seasonal incidence of *H. antonii* on neem in southern Karnataka and Tamil Nadu, respectively. However, no reports are available on the occurrence of *H. antonii* on neem from northern Karnataka region.

MATERIALS AND METHODS

To record the activity and incidence of *H. antonii* on neem, a roving survey was carried out in two districts of Northern Karnataka viz., Raichur and Yadgir during 2021-22. The locations surveyed in Raichur district include UAS, Raichur campus (16.20443°N, 77.3324°E), Hunsihalhuda (16.20079°N, 77.25123°E), Gonhal (16.19874°N, 77.22497°E), Kalmala (16.19925°N, 77.20643°E), Murhapur (16.23909°N, 77.19056°E), Sultanpur (16.25452°N, 77.1869°E), Kallura (16.13879°N, 77.21557°E), Hokrani (16.10589°N, 77.1714°E), Betadoor (16.04968°N, 77.12582°E), Neermanvi (16.04558°N, 77.1044°E), Hirekotnekal (15.96163°N, 76.95371°E), Pothnal (15.92269°N, 76.89155°E), Mannikeri camp (15.88673°N, 76.84488°E), Jawalagera (15.86557°N, 76.81592°E), Venkatareddy camp (15.84067°N, 76.79903°E), Heliport (15.76862°N, 76.73247°E), Mullur E.J. camp (15.82633°N, 76.74094°E), Panduranga camp (15.87716°N, 76.68391°E), Basapura EJ camp (15.85179°N, 76.70454°E), Rangapura (15.89758°N, 76.6789°E), Maski (15.95543°N, 76.65422°E), Ankusadoddi (16.03715°N, 76.60974°E), Santhe Kallur (16.05555°N, 76.56681°E), Lingasugur (16.12678°N, 76.52691°E), Devadurga (16.42414°N, 76.93386°E), Sasvigera (16.41742°N, 76.9579°E), Chikkahonnakunni (16.39651°N, 76.98804°E), Miyapur (16.38608°N, 76.99966°E), Masarakal (16.36777°N, 77.02054°E), Kakargal (16.33937°N, 77.05365°E), Sunkeshwarahal (16.32855°N, 77.09098°E), Khanapur (16.31421°N, 77.11717°E) and Gabbur (16.30219°N, 77.15643°E).

While in Yadgir district, Bheemarayanagudi (16.72959°N, 76.80034°E), Shahapur (16.6834°N, 76.84966°E), Vibutihalli (16.66426°N, 76.85672°E), Hattigudur (16.60258°N, 76.88012°E), Markal Kollur (16.50246°N, 76.9132°E), Kongandi (16.5771°N, 76.84698°E), Bijaspur (16.55529°N, 76.81905°E), Arkera Khalsa (16.54313°N, 76.80313°E), Rangampet (16.52829°N, 76.76924°E), Shorapur (16528201°N, 76.77267°E), Shorapur Bus Depot (16.53487°N, 76.78748°E), Kumbarpet (16.50505°N, 76.75337°E) and Kavadimatti (16.48254°N, 76.74781°E). In each location, neem trees/plants of all ages either planted along road side, in parks, in forest nurseries or in public places like temples/bus stops etc., were observed for presence and activity of tea mosquito bug. The adults and nymphs were collected and preserved as dry and wet preservatives, respectively. The identity of the species was confirmed with taxonomist, Dr. Yeshwanth, H.M., Department of Agricultural Entomology, University of Agricultural Sciences, Bengaluru. The incidence level in the sampled tree/ plant was assessed visually as % young twigs affected, and later converted into damage score as 0 - no incidence, 1- <10% incidence, 2 - 10-25% incidence, 3 - 25-50% incidence and 4 - >50% incidence (damage score reference).

RESULTS AND DISCUSSION

Presence of lifestages of *H. antonii* was recorded in all neem plants/ trees observed during the roving survey (Figs. 1-3). All the surveyed trees/ plants irrespective of age and place were affected (Fig. 5). Earlier report of *H. antonii* on neem in southern Karnataka was made by Onkarppa (1993). The incidence started in July 2021 and reached peak between October and December. The level of incidence varied from 1-4; in Maski, Ankusadoddi, Santhe Kallur, Lingasugur, Devadurga, Sasvigera, Chikkahonnakunni, Vibutihalli, Hattigudur and Markal Kollur, the damage score was 1 (<10% incidence); at UAS, Raichur campus, Hunsihalhuda, Gonhal, Kalmala, Murhapur and Sultanpur, the damage score was 2 (>10-25%); Rangapura, Miyapur, Masarakal, Kakargal, Sunkeshwarahal, Khanapur, Gabbur, Bheemarayanagudi, Shahapur, Kongandi, Bijaspur, Arkera Khalsa, Rangampet, Shorapur, Shorapur Bus Depot, Kumbarpet and Kavadimatti, it was 3 (>25-50%); while maximum of 4 (>50%) was recorded in Kallura, Hokrani, Betadoor, Neermanvi, Hirekotnekal, Pothnal, Mannikeri camp, Jawalagera, Venkatareddy camp, Heliport, Mullur E.J. camp, Panduranga camp and Basapura EJ camp.

A closure observation on the lifecycle revealed that, eggs were inserted into the epidermal tissues of tender shoots by female bug which can be spotted by the presence of two silvery filament like process arising laterally on both side of the eggs (Fig. 1). Eggs are white and ovo-elongate. Nymph is reddish or reddish-brown with long legs and antennae. Thorax usually with a pin-like nobbed scutellar process dorsally (Fig. 2). Adult is elongate, measuring 0.3-0.6 mm in length, body reddish brown with black head. Thorax is reddish- brown with a pin-like nobbed scutellar process. While abdomen has white band on its ventral side in both male and female, it is more prominent in female (Fig. 3). Nymphs and adults are commonly found on tender shoots. They feed by sucking the sap from tender shoots which leads to formation of a typical discolored necrotic area or a lesion around the point of feeding (Fig. 4). Later, the necrotic area or lesions on shoots coalesce and eventually result in drying of shoots. Under severe incidence, burnt appearance of the trees can be seen (Fig. 5). Further, exudation of a resinous gummy substance from the feeding punctures can also be seen (Fig. 6). Similar observations made by Onkarappa (1993) and Sundararaju and Babu (1996) confirm the present ones.

Fig. 1. Egg

Fig. 2. Nymph

Fig. 3. Adult

Fig. 4. Nymph sucking sap

Fig. 5. Damaged trees

Fig. 6. Gummosis

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