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Short Communication

Incidence and management of the leaf hopper, *Busoniomimus manjunathi*, on Malabar Tamarind, *Garcinia cambogia*

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***Garcinia cambogia,* the Malabar Tamarind is an evergreen spice tree known for its medicinal properties and mainly used as a spice in India. The crop is generally free from severe pests and disease attack. Of late, a leaf hopper *Busoniomimus manjunathi* was observed for the first time from farmer's field. Infested plants showed various symptoms of damage from wilting of branches to complete drying up of the plant. The pest could be managed by *Azadirachta india* oil based formulation and synthetic insecticide, dimethoate. Close association of yellow ants was also recorded.**

Key words: Spice tree, Malabar tamarind, neem soap, pest management.

INTRODUCTION

Garcinia, *Garcinia cambogia* (Gaerdn.) Desr., (Fa. Clusiaceae), known as Malabar Tamarind or camboge tree is an ever green tree indigenous to South Asia especially Thailand and India. The tree is found commonly in the evergreen forests of Western Ghats from Konkan to southwards in India. In Kerala, the Southern state of India, it is manly cultivated as a homestead crop (George et al., 1992) particularly in southern districts. According to Orwa et al. (2009) Garcinia is much adapted to both hilltops and plain lands and perform best in riverbanks and valleys and also grows well in dry or occasionally water logged or flooded soils. South Western part of Alappuzha district, Kerala is famous for this crop as it grows up well in sandy soils with salty water inundation. The plant is androdioecious in nature with two types of trees (George et al., 1992). Male plants bear only staminate flowers whereas female tree having hermaphrodite flowers. The crop is a popular spice tree in this area and dried rind is used in various culinary preparations with fish or prawn (Nybe et al., 2007). The economic part is mature fruit and rinds of ripe fruit are processed and used. Plants flower during January to March (Nybe et al., 2006) and fruit maturation take around four to five months. The major acid contents in the fruit rind of *G. cambogia* were (-)-hydroxycitric acid (HCA)(16 to 18%) and citric and malic acid in minor quantities (Jayaprakash and Sakariah, 1998). Revathi et al. (2010) reported 42 to 44% HCA in the plant extract. With its anti-inflammatory, antiulcerogenic, lipid lowering and fat oxidation properties, Garcinia is helpful in treating various gastrointestinal disorders, balancing cholesterol levels and burning body fat, as well as stabilising agent. It is a very effective herbal medicine for controlling obesity and cholesterol (Geetha et al., 2011). Hydroxycitric acid is a high value product in controlling obesity. The tree is usually free from major pest attacks. Nair et al. (2005) reported that no serious pests or diseases were seen affecting the seeds or seedlings in nursery or early plantations. Mild attack of aphids in a few seedlings,

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Figure 1. *Busoniomimus manjunathi* adult on *G. cambogia* attended by ants *Anoplolepis gracilipes.*

Figure 2. *B. manjunathi* nymphs on *G. cambogia* with ants, *Anoplolepis gracilipes*

termite attack on nursery beds and a dipteran leaf miner were reported by Mathew (2005). Hard scales and beetles are the common pests infesting the crop as reported by Orwa et al. (2009). The dried rind fetches USD 6 to 7 kg^{-1} in local markets. So the cultivation of this spice tree is gaining popularity nowadays.

MATERIALS AND METHODS

Regular pest surveillance was carried out in homesteads to detect and identify any new pest outbreak in Alappuzha district. In 2011, during July to August following the South-West monsoon heavy incidence of *Busoniomimus manjunathi* Viraktamath and Viraktamath (order: Hemiptera; family: Cicadellidae; subfamily: Idiocerinae) was observed in young *G. cambogia* plants from Devikulangara village (9°9'11"N and 76°30'26"E; 7 m above mean sea level), Southern part of Alleppey district, where *G. cambogia* was grown as intercrop in coconut gardens. Two to four year old plants were seen infested with a leaf hopper attended by ants. Farmer participatory field observations conducted revealed 20 to 25% infestation in the locality.

RESULTS AND DISCUSSION

The adult hoppers collected from the field were small, 5.04 ± 0.184 mm in length and eyes to eyes width 1.74 ± 0.149 with ochraceous brown pronotum and scutellum (Figure 1). B. manjunathi was first reported as a pest on mango (Mangifera indica L. Family: Anacardiaceae) in Yellapur and Hebri, Karnataka, South India (Viraktamath and Viraktamath, 1985). There were two round spots on upper part of face and a large spot on each mesopleuron. Two black patches on disc and basal angles of scutellum were also present. Forewings were brown in colour and hind wing membraneous and transparent. Distal transverse row of reddish spines in hind tibia with black coloured claws were also seen. Legs were ocharaceous brown in colour. Nymphs had reddish black thorax and dark coloured head. Just emerged nymphs were dark in colour.

The adults and nymphs of the pest were found clustering and feeding on tender shoots and also on abaxial surface of leaves. Initial symptom of infestation was drooping of fleshy tender leaves which subsequently lead to wilting and drying up of affected twigs. Two year old infested seedlings were found totally dried up within one month of pest attack. Severe and thick sooty mould appeared on the upper surface of lower leaves due to the honey dew deposition on these parts, which reduced photosynthetic activity. First, report of the pest on *G. cambogia* was from College of Horticulture Campus, Vellanikkara, Thrissur District, Northern part of Kerala (10° 31'N and 76°13'E, 22.25 m above mean sea level) as nursery pest in 2001 (Maicykutty et al., 2002). Over a period of nine years the pest has spread towards south, 190 km away from the initial reported area. It is the first report of the pest from field conditions.

Observations made in the pest infested plots recorded constant association of an ant species with the pest (Figure 2). The ant was identified as *Anoplolepis gracilipes* (Smith,F) (Hymenoptera: Formicidae, Formicinae) and were found feeding on the honey dew from the hopper nymphs and adults. The presence and movement of these ants in the plant indicated presence of the pests in the tree which also play major role in pest dispersal. Viraktamath (2007) opined that although ants attending aphids, coccids and membracids were common, their association is noticed very less with leafhoppers. They reported ants association with *Hishimonus viraktamathi* Knight breeding on *Terminalia* sp., species of *Macropsis* sp. breeding on *Acacia* and *B. manjunathi* on garcinia. Maicykutty et al. (2002) noticed the presence of the ant *Plagiolepis* sp. with *B. manjunathi.*

Yielding plants of more than 15 years age standing near to the pest infested seedlings were free from pest while fruiting plants of less than 10 years of age were infested showing susceptibility of seedlings/younger plants to this pest. Ad hoc pest management practices with dimethoate (0.05%) on seedlings and 'Neem Soap', a product from Indian Institute of Horticultural Research (IIHR), Bangalore, India at 10 g/L of water on fruiting plants gave effective pest suppression with zero pest count after 48 h of spraying. Sooty mould peeled off after the cessation of pest attack and normal photosynthetic activities were restored thereafter. Initial pest outbreak was observed during July to August as also reported by Maicykutty et al. (2002) but it continued up to November even after the North-West monsoon period. The pest was seen reappearing on the young plants treated with dimethoate after two months of treatment. However, in plants treated with neem soap there was no re-incidence of the pest even three months after treatment. Need based application of appropriate insecticide play a vital role in revival of the plant. Surveillance and time bound management of the pest is essential to save *G. cambogia* seedlings/young plants from hopper infestation and sustainable cultivation of tree. Regular movement of seedlings of trees including mango, jack fruit, garcinia, nutmeg etc. were noticed from the initial report area (Thrissur district, Kerala) to the Alleppey region which may be one of the reason for spread of the pest. Regular pest surveillance and precautions should be taken while transporting seedlings in and out of the region, especially mango and garcinia to contain the spread of the pest to other areas.

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