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Report of incidence of mango fruit borer, *Citripestis eutraperha* (Meyrick) (Lepidoptera: Pyralidae) as apple and nut borer in cashew, *Anacardium occidentale* L. (Anacardiaceae) in maidan parts of Karnataka, India

Kori Nagaraj², N. Aswathanarayana Reddy^{1&2}, Subramanyam, B¹ and Ramegowda G.K³

¹AICRP on Cashew, HREC, Hogalagere -563 138, Kolar district, Karnataka, India

²Department of Entomology, College of Horticulture, Kolar - 563103, Karnataka, India

³Department of Entomology, College of Horticulture, Mysore - 571130, Karnataka, India

Corresponding author: nanreddy5002@gmail.com

Introduction

Cashew (*Anacardium occidentale* L), belongs to the family Anacardiaceae, which is widely grown for its highly nutritious and tasty kernels and is popularly known as “king of nuts” or “wonder nut”. This crop is a native of Brazil, introduced to India by Portuguese travellers for the purpose of afforestation and soil conservation during 16th century. The area under cashew crop started increasing from the beginning of 21st century in non-traditional cashew growing regions in maidan parts of Karnataka (mainly districts of Kolar, Chikballapur, Bangalore Rural, Tumkur etc) of south India. However, the cashew pest scenario in non-traditional regions is also changing and becoming alarming. The successful cultivation of cashew is determined by number of biotic and abiotic factors. Among biotic factors, more than 190 species of insect and mite pests have been listed on cashew occurring in different cashew growing countries of the world (Sundararaju, 1984). Of which, tea mosquito bug (*Helopeltis antonii* Sign.) cashew stem and root borer

(*Plocaederus ferrugineus* L.) are major insect pests (Anon., 2017).

Recently, the mango fruit borer, *Citripestis eutraperha* (Meyrick) which belongs to Family Pyralidae of Order Lepidoptera first described by Meyrick (1933) became a major pest on cashew as apple and nut borer. Geographically, it is distributed in countries like Java, Indonesia, India, Northern Territory in Australia and Bangladesh as a minor pest of mango (Soumya *et al.*, 2016). However, in India, the *C. eutraperha* was first reported from Andaman and Nicobar Islands on local endemic mango species (*Mangifera andamanica* L.) belonging to family Anacardiaceae (Bhumannavar, 1991) indicating the geographical spread within the country. Later, this species became a major pest on cashew (*Anacardium occidentale*) from Andaman Islands (Jacob *et al.*, 2004). Soumya *et al.* (2016) reported that *Citripestis eutraperha* was fairly well established in Kolar, Bengaluru Rural and Hassan districts of Karnataka. They were found infesting lime-sized mango fruits up to pre-harvest, when

serious fruit rotting on tree sets in. As advanced stage of infestation is rotten fruits which can be detected, it is unlikely that mature fruits brought from the Andamans must have inadvertently resulted in the introduction of the insect. It is then most probably be the early stages (lime-sized) used for pickles, which have been brought by tourists from the Andamans. Chances are that these mangoes with larvae may have got discarded as kitchen waste, a probable route of introduction. Another possibility is that *C. eutrapphera* must have existed in the mainland and may have gone undetected by its sheer low numbers, and caught attention, when infestation became noticeable. This *C. eutrapphera* recently invaded and spread in different states like Karnataka, Tamil Nadu, Kerala and Gujarat. Hiremath *et al.* (2017) reported that the *C. eutrapphera* infests seedlings and grafts of cashew in Kerala and as apple and nut borer on cashew in maidan parts of Karnataka.

The moth lays eggs on tender vegetative shoots of cashew and after hatching the neonate larva initially bores into the terminal tender shoots, and seedlings/grafts in nursery. The larva damages vascular bundles inside the tender shoots by excessive tunneling, throwing frass material and their excreta from the bored holes. This affects uptake of water and nutrient to upper terminal canopy, resulting in yellowing, drying of leaves and

wilting of terminal shoots. After apple and nut formation stage, larva bores an immature apple as well as nuts, and feeds on internal content of apple as well as on young developing kernels. The infested apple and nuts become partially unfilled and dries up before full development and maturity of nuts. Generally single caterpillar was seen feeding either in the apple or nut, but there are reports stating that up to five larvae can occur in cashew apples and three in developing nuts.

The extent of damage ranges from 10 to 16 percent on developing young cashew apples in maidan parts of Karnataka. The peak infestation of *C. eutrapphera* as apple and nut borer of cashew was found during February to May, which coincides with apple and nut formation stage. These observations are in agreement with the findings of Kori Nagaraj *et al.* (2020), who reported that peak infestation of apple and nut borer, *C. eutrapphera* was during peak summer months in Bangalore condition and also in maidan parts of Karnataka (Aswathanarayana Reddy *et al.*, 2016). Similarly, Jayanthi *et al.* (2014) also reported on occurrence of fruit borer, *C. eutrapphera* (Meyrick) from mainland causing extensive damage to fruits of mango (*Mangifera indica* L.) in Karnataka and Tamil Nadu. Therefore, timely plant protection operations are extremely important to minimize yield loss.



1a. Infestation at marble size



1b. Infestation of immature apple and nut



1c. Tunneling inside the apple



1d. Infestation of mature apple and nut



2a. Male



2b. Female

Plate 2. Adults of *Citripestis eutraperha*

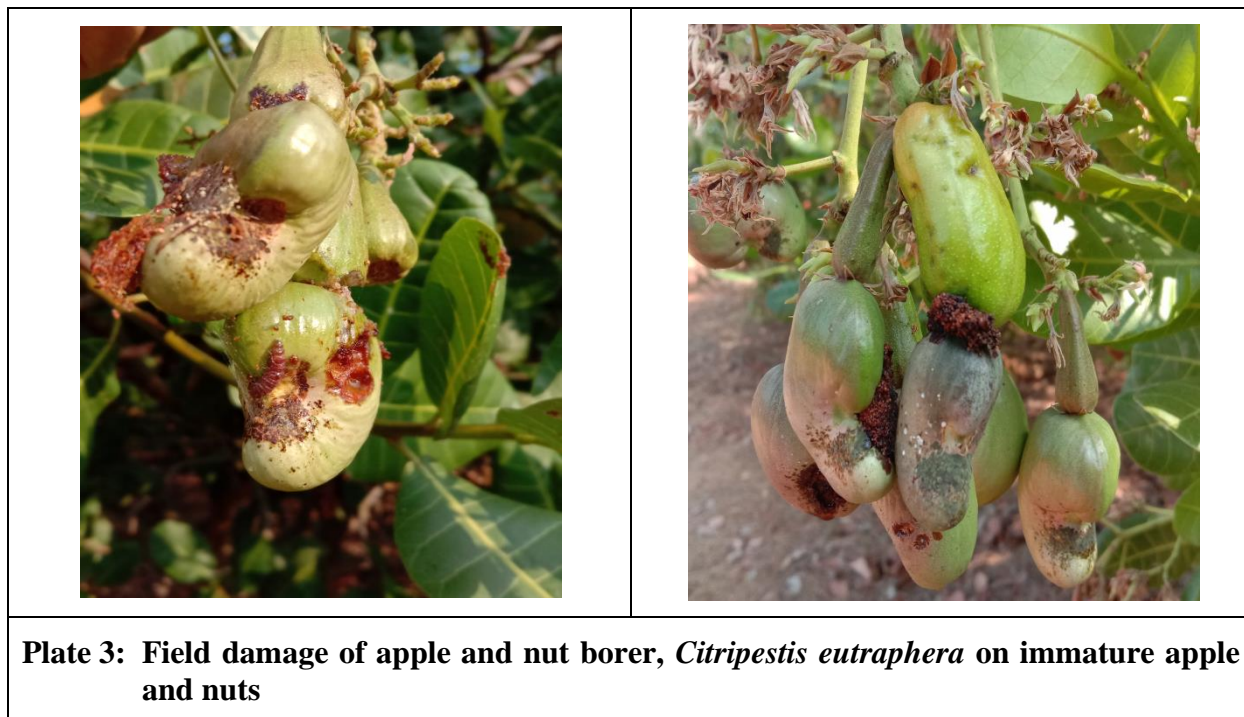


Plate 3: Field damage of apple and nut borer, *Citripestis eutraperha* on immature apple and nuts

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