

Record of Exotic Parasitoid *Encarsia cubensis* (Hymenoptera: Aphelinidae) on Neotropical Woolly Whitefly *Aleurothrixus floccosus* and Solanum Whitefly *Aleurotrachelus trachoides*

Two invasive whiteflies (Hemiptera: Aleyrodidae) of Neotropical origin, viz., solanum/pepper whitefly, *Aleurotrachelus trachoides* (Back) and woolly/citrus whitefly, *Aleurothrixus floccosus* (Maskell) were recorded for the first time from India during 2015 and 2019, respectively. These whitefly species are highly polyphagous and can multiply and spread rapidly in India on many economic crop plants and cause massive economic losses. Distribution of *A. trachoides* is observed in Karnataka, Kerala, Maharashtra, West Bengal, Assam, Arunachal Pradesh and Tamil Nadu. Similarly, *A. floccosus* is extended to Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, West Bengal, and Maharashtra. Besides mainland distribution, it was also reported in Lakshadweep Islands and Andaman and Nicobar Islands on guava. The pests are believed to be dispersed rapidly in India, mainly through swift movement of infested seedlings. Both these invasive pests are most commonly coexisting with other native/other invasive whiteflies. *A. trachoides* coexist with spiraling whitefly, *Aleurodicus dispersus* Russell; nesting whitefly, *Paraleyrodes minei* Iaccarino and cotton whitefly, *Bemisia tabaci* (Gennadius) on tobacco, capsicum and brinjal whereas *A. floccosus* coexist with rugose spiraling whitefly, *Aleurodicus rugioperculatus* Martin, Bondar's nesting whitefly, *P. bondari*, *A. dispersus*, *P. minei* on guava.

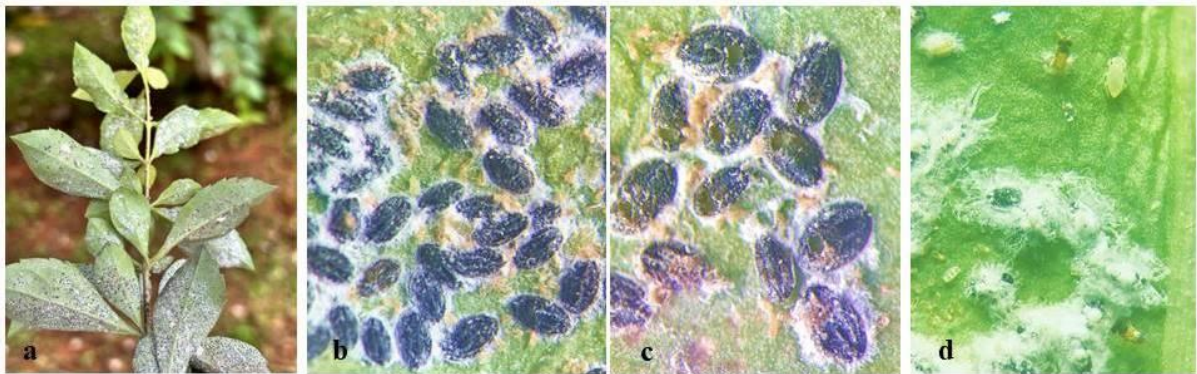


Fig. 1. a) Solanum whitefly infested *Duranta* leaf; b) Parasitized puparium of *Aleurotrachelus trachoides*; c) Parasitoid emergence hole; d) Adult parasitoid, *Encarsia cubensis*.

Utilization of potential natural enemies is considered an important and effective strategy in pest management, especially for exotic pests through classical augmentation or conservation biological control to manage and contain the pest population. Therefore, our team has conducted regular surveys in pest-affected areas to document the natural enemies of these pests in the country. During these surveys, an exotic parasitoid called *Encarsia cubensis* Gahan (Hymenoptera: Aphelinidae) was found to emerge on fourth instar nymphs of both *A.*

trachoides (Fig.1) and *A. floccosus* (Fig.2). The nymphs were collected from *Duranta erecta* L. and *Solanum nigrum* L. in Karnataka, India and *Psidium guajava* L. in Tamil Nadu and Karnataka, India. Identity of species was confirmed through their morphological and molecular characteristics. Partial mitochondrial cytochrome oxidase 1 (CO1) gene sequences (PQ397536; PQ456730; PQ456728; PQ456729) demonstrated 98.41- 99.14% similarity with *E. cubensis* sequence (ON881119) submitted from India. This study confirms the first occurrence and establishment of *E. cubensis* on *A. trachoides* and *A. floccosus* in India. *E. cubensis* is a tiny, solitary endoparasitoid that primarily develops within the nymphal stages of these whiteflies, ultimately leading to its death. Across the surveyed locations, natural parasitism of 24.75-48.60% on *A. trachoides* and 04.14-15.67% on *A. floccosus* were recorded.



Fig. 2. a) Woolly whitefly infested guava leaf; b) Parasitized puparium of *Aleurothrixus floccosus*; c) Adult parasitoid, *Encarsia cubensis*

Earlier, this parasitoid reported on an invasive palm-infesting whitefly, *Aleurotrachelus atratus*, infesting many economically important palm plants in India. The present study indicates that *E. cubensis* is well-established in India and it has expanded its host ranges on *A. trachoides* and *A. floccosus* in India, as it was reported as a host insect elsewhere. Therefore, study paved the way for natural pest regulation of *A. floccosus* and *A. trachoides* through augmentation and conservation strategies.

Identified and reported by

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