

Pest alert

**Invasive Annona Whitefly, *Aleurotrachelus anonae*
(Hemiptera: Aleyrodidae) (Corbett) on Custard
Apple: a New Record to India**



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Invasive Annona Whitefly, *Aleurotrachelus anonae* (Hemiptera: Aleyrodidae) (Corbett) on Custard Apple: a New Record to India

ICAR-NBAIR is entrusted with the monitoring and reporting of alien invasive insect pests in the country. Bureau has identified a new invasive whitefly, *Aleurotrachelus anonae* (Corbett): (Hemiptera: Aleyrodidae) for the first time from India. The pest was found to colonize on custard apple, *Annona squamosa*, cherimoya, *Annona cherimola* (Magnoliales: Annonaceae) and Indian shot, *Canna indica* (Zingiberales: Cannaceae) at Bengaluru Urban and Bengaluru Rural districts of Karnataka during July-August, 2024. Globally, this whitefly is under quarantine regulation and known for economic importance on many host plants.

This species is commonly known as annona whitefly, as they prefer to colonize on plants under family of Annonaceae. Identity of species was confirmed through their morphological characteristics at ICAR-NBAIR and further confirmed by Dr. R. Sundararaj, Former Scientist-G, IWSI, Bengaluru. Further, identity of the species was ascertained through molecular characterization (GenBank Accession No. PQ397348 & PQ425730) and the nucleotide sequences shared 99.63-99.64% similarity with the *Aleurotrachelus anonae* (HM150624) reported from Hainan Island, China. Voucher specimens of puparia on permanent slides are deposited with ICAR-NBAIR repository as NBAII/HEM-ALEU/20824). This pest alert represents the first record of the distribution of this invasive species in India along with its natural enemies.

Damage Symptoms and Biology: Nymphs and adults of *A. anonae* colonize on the underside of host plants and suck sap which results depletion of nutrition and water resulting into yellowing and premature defoliation (Fig.1). Owing to its feeding, moderate to severe sooty mould development was also observed. All the nymphal stages of *A. anonae* are light-colored and not covered with white flocculent wax. The intensity and severity of infestation was 20-35%, 5-10% and less than 5% on custard apple, cherimoya and *C. indica*, respectively.



Fig.1 Symptoms of Annona Whitefly, *Aleurotrachelus anonae* on Custard Apple

It was found that colonies of *A. anonae* coexist with invasive whiteflies *viz.*, Bondar's nesting whitefly, *Paraleyrodes bondari* and nesting whitefly, *P. minei* and native whiteflies *viz.*, breadfruit whitefly, *Dialeurotopora decempuncta* and *Aleurocanthus woglumi* in custard apple and cherimoya (Fig. 2).



Fig.2. *Aleurotrachelus anonae* coexistence with other whiteflies on custard apple

Biology and life stages of *Aleurotrachelus anonae*: Adult population prefers to colonize the terminal leaves and lay eggs. Eggs are stalked, initially creamy white and turn to dark brown before hatching. The nymphal stages of *A. anonae* has a distinct pattern comprised of three dorsal brown patches; give the appearance of a mid-dorsal horizontal stripe on body (Fig.3). *A. anonae* is a very distinctive species that in some respect resembles recently invaded woolly whitefly, *Aleurothrixus floccosus* which produce and completely covered with white flocculent wax. Whole life cycle is completed in about 28-32 days.



Fig.3. Life stages of *Aleurotrachelus anonae* on Custard apple

Global distribution and probable pathways of introduction to India: *A. anonae* is well established in The United States of America (Florida, Hawaii & Washington DC), China (Hainan Island), Malaysia, Taiwan, Japan, Australasia, Malaya and Bangladesh on custard apple, *Annona squamosa* (Annonaceae) and many non-annona plant species such as Mulberry, *Morus indica* (Moraceae), avocado, *Persea americana* and cinnamon, *Cinnamomum verum* (Lauraceae); swamp taro, *Cirtosperma* sp. and Elephant Foot Yam, *Amorphophallus* sp. (Araceae); Banana, *Musa* spp. (Musaceae) and Ginger, *Zingiber* sp. (Zingiberaceae). Besides, interception of this pest was

reported in Korea and USA in agri-imports from Thailand and Indonesia. *A. anonae* might have introduced to India along with plant materials importation or and their produce.

In India, so far its occurrence was noticed in Bengaluru Urban district of Karnataka during July-August, 2024 on *Annona squamosa*, *Annona cherimola* (Magnoliales: Annonaceae) and *Canna indica* (Zingiberales: Cannaceae).

Occurrence of Natural Enemies in India: Survey also revealed the occurrence of two nymphal parasitoids, *Encarsia* sp. and *Eretmocerus* sp. (Hymenoptera: Aphelinidae) with 5-10% natural parasitism and predator, *Scymnus latemaculatus* (Coleoptera: Coccinellidae) was observed in association with *A. anonae* colonies in India (Fig.5). However, globally there is no record of any parasitoid/predator so far.



Fig.5. Natural associated of *Aleurotrachelus anonae* in custard apple in India

Economic Importance of India Agriculture: Apart from custard apple, *A. anonae* can infest several important fruit crops (bananas and avocados), tuber crops and several ornamental plants. *A. anonae* is preferred to colonize on plants belong under Annonaceae. If left unchecked, it could be a potential threat to many economically important crop plants in India. **In USA, *A. anonae* is categorised as “A” rated pest organism which are known for economic importance, subject to enforcement action involving eradication, quarantine regulation, containment, rejection, or other holding action.** Keeping in view of its quarantine importance, stringent vigilance and enforcement required to contain its spread to other custard apple and host plant growing states in India.

Advisory for the Containment and Management:

- Domestic quarantine to be strengthened, any plant material including ornamental plants should be thoroughly checked.
- Sensitize all the stakeholders on the invasion of this exotic whitefly in India along with probable list of host plants.

- Nationwide intensive survey may be initiated to monitor and determine its distribution in India.
- Avoid use of insecticides against the pest, as several natural enemies including nymphal parasitoids have been recorded. Hence, augmentation and conservation of these natural enemies is suggested.
- Development of viable biocontrol approaches to tackle this invasive pest on custard apple and other potential host plants in India is the need of hour.

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