



Egg spirals



Nymphs

- Eggs are yellowish in colour and elliptical in shape. Eggs are laid singly on the under surface of the leaves.
- Nymphs are yellowish in colour and produce a dense, cottony wax and also develop white wax filaments.

### Integrated management strategies for RSW Monitoring

- Monitoring the population of whiteflies through instalment of yellow sticky traps
- Regular survey and monitoring the pest activities at weekly intervals



Yellow sticky trap

### Cultural control

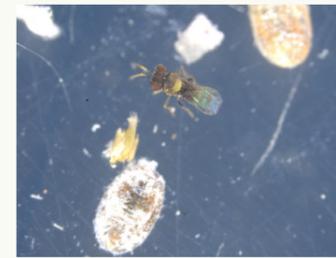
- Select pest free coconut seedlings. Avoid transportation of seedlings from infested areas or palms
- Follow proper spacing and inter-cultural operations
- Application of recommended doses of fertilizers
- Enforce strict domestic quarantine measures to prevent the spread
- Encourage/ conserve natural enemies population through growing reservoir plants/ banker plants like Banana and Henna.

### Mechanical control

- Installation of yellow sticky traps on the palm trunk @ 15 /acre
- Use forced water spray on the lower surface of leaflets to dislodge the adult populations
- Installation of yellow light traps.

### Biological control

- Augment/ conserve the coccinellids and neuropteran predators
- Encourage the build-up of parasitoid *Encarsia guadeloupae* and re-introduce parasitized pupae in the whitefly-infested orchards.
- Periodic release of *Dichochrysa* sp. nr. *astur* @ 1000 eggs/ha at 15 days interval
- Foliar application of entomopathogenic fungus, *Isaria fumosorosea* @  $2 \times 10^8$  spores/ml (5g/litre of water) at 15 days interval
- Under severe outbreak condition neem oil 1% may be applied
- Starch solution 1% mixed with detergent/ Khadi soap @ 5g/ litre of water may be used to dislodge the sooty mould growth on the leaves



Parasitoid *Encarsia guadeloupae*



Chrysoiid larva



Parasitized pupae



Chrysoiid Adult



Spraying of *Isaria fumosorosea*

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**Acknowledgement**  
The financial assistance from NABARD for this project "Empowerment of Farmers through Adoption of Sustainable and Eco-Friendly Integrated Pest and Diseases Management Technologies in Major Vegetable Crops in Goa" (NB. Goa. FSDD.1095.B.FSDD.2019-20) is acknowledged.



भा.कृ.अनु.प.-केंद्रीय तटीय कृषि अनुसंधान संस्थान  
(भारतीय कृषि अनुसंधान परिषद)  
ओल्ड गोवा ४०३ ४०२, गोवा, भारत



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# Integrated management of invasive Rugose Spiraling Whitefly *Aleurodicus rugioperculatus* Martin

## Introduction

Rugose spiraling whitefly (RSW), *Aleurodicus rugioperculatus* Martin is a highly polyphagous invasive pests native to Central America. The occurrence of *A. rugioperculatus* was first reported from India, Pollachi, Tamil Nadu in 2017. It is widely distributed in India, causing severe economic damage to coconut and other horticultural crops. *A. rugioperculatus* has emerged as major pest on coconut, oil palm, banana, guava and several other host plants in India. Severe infestation of RSW in coconut caused on an average 38 per cent nut yield loss and 20–25% bunch yield reduction was reported in oil palm.

## Damage symptoms

- Nymphs and adults of the whitefly suck the sap on the under surfaces of the leaflets.
- It also secretes copious amount of honeydew which promotes the development of sooty mould growth that hinders photosynthesis activities of the plant
- Presence of egg spirals on leaf petiole as well as on tender coconuts



Affected leaves



Colonies undersurface of leaf



Egg spirals



Sooty mould growth

## Host plants

Coconut and banana are found to be common and most preferred hosts. The other host plant includes Heliconia, Guava, Henna, Mango, Arecanut and Oil palm.



Banana



Heliconia



Triandra palm



Guava

## Identification and biology

- Adults are larger in size and having two pale brown wavy markings on the forewings
- The females are slightly larger than males.
- Males have long pincer-like structures at the end of their abdomen.



Adult



Adults



Eggs