

RUGOSE SPIRALLING WHITEFLY (*Aleurodicus rugioperculatus* Martin) – A NEW INVASIVE PEST ON COCONUT IN TAMIL NADU

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Rugose Spiralling Whitefly (RSW) (*Aleurodicus rugioperculatus* Martin) is an invasive pest on coconut reported from Polalchi, Tamil Nadu and Palakkad, Kerala during July-August 2016. Now it is a serious pest in all over Tamil Nadu. As a polyphagous pest with more than 200 host plants, entry of the pest has been viewed seriously in the coconut and oil palm growing regions of South India. During recent surveys the pest incidence was noticed in Adhiyamaan College of Agriculture and Research, Krishnagiri, Tamilnadu, in and around the villages on coconut plants. Hence efforts were taken to popularize the management technology among farmers through front line demonstrations.

ORIGIN:

Believed to have originated from Central America and its incidence is limited to Belize, Mexico, Guatemala and Florida in Central and North America.

MAJOR STATES AFFECTED:

Tamil Nadu, Karnataka, Andhra Pradesh, Telangana and Kerala.

HOST PLANTS:

Coconut, banana, mango, sapota, guava, cashew, maize, ramphal, oil palm, Indian almond, water apple, jack fruit and many other ornamental plants like bottle palm, Indian shot, false bird of paradise, butterfly palm.

DAMAGE SYMPTOMS

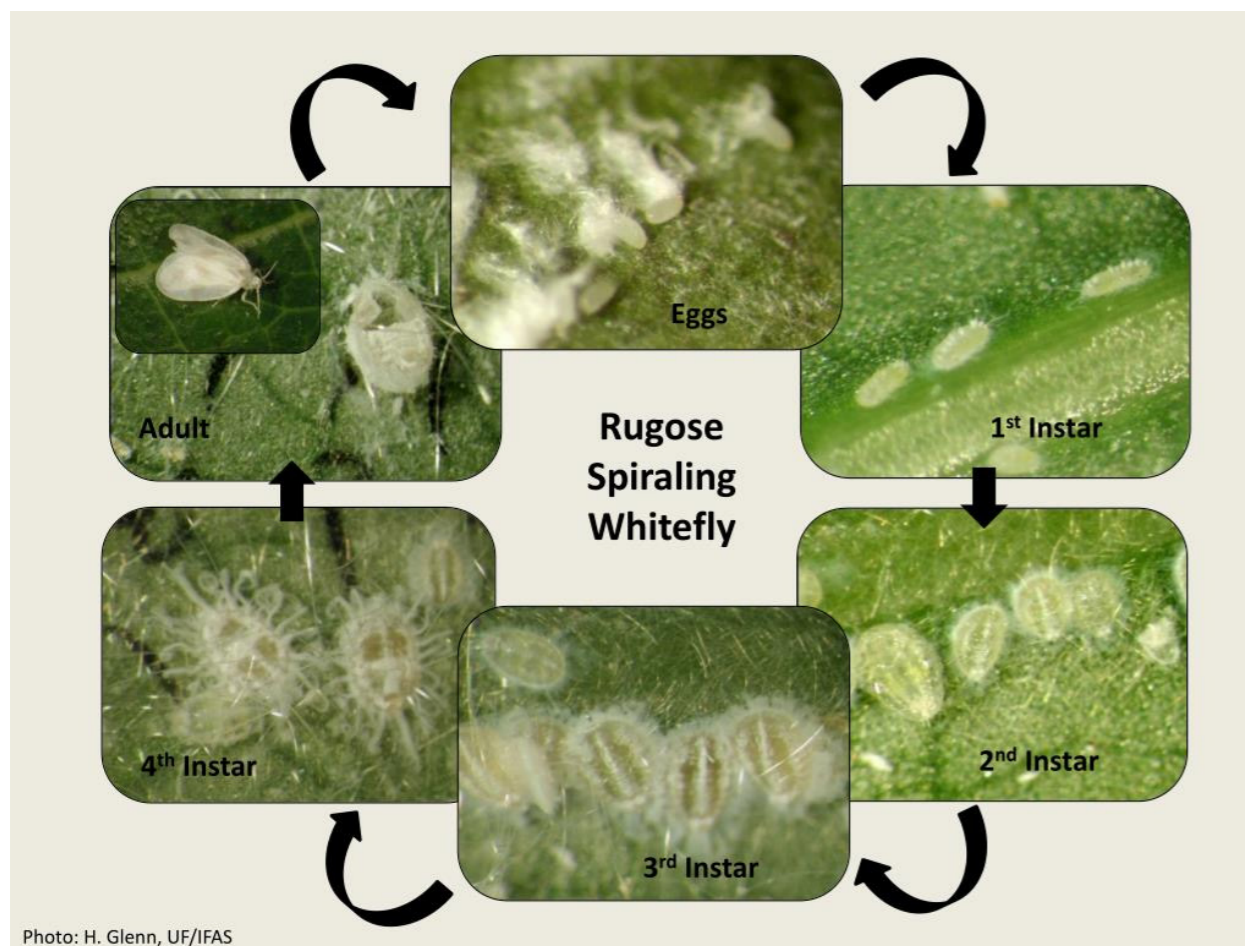
- The immature and adult whiteflies have a sucking feeding habit
- Siphon out coconut sap by selective feeding on the under surfaces of the leaflets.
- Extensive feeding of the insect leads to the excretion of honey dew which subsequently gets deposited on the upper surface of the leaves.
- Honey dew excrement, being sweet and watery, attracts ants and encourages growth of the fungus *Capnodium sp.* This causes disfigurement of hosts and affects the photosynthetic efficiency of the plant.
- The nature of the pest attack will be noticed first from the outer whorls and slowly it progresses towards the inner whorls.
- The pest is seen active during the year where temperatures are high



Sooty Mold Symptoms

IDENTIFICATION OF THE PEST:

- **Egg:** Females lay eggs on the underside of leaves; Eggs are elliptical and yellowish in colour, 0.3mm long, translucent with a short stalk and are laid singly and associated with irregularly spiralling deposits of white flocculent wax surrounding each egg in a semi-circular spiralling fashion.
- **Immature stages:** Rugose spiraling whitefly has 5 developmental stages.
- **Crawler stage:** The first instar, known as the crawler stage (because it is the only mobile immature stage) hatches out of the egg, and looks for a place to begin feeding with its needle-like mouth parts used to suck plant sap. Crawlers molt into immature stages that are immobile, oval and flat initially but become more convex with the progression of its life cycle.
- **Nymphal stage:** Nymphs are about 1.1 - 1.5 mm long but may vary in size depending on instars. The nymphs are light to golden yellow in color, and will produce a dense, cottony wax as well as long, thin waxy filaments which get denser over time.
- **Pseudo-puparium:** The final immature stage is the pseudo-puparium, which is about 1 mm in length and is used in taxonomic identification.
- **Adults:** Rugose spiraling whitefly adults are about three times larger (approx. 2.5 mm) than the commonly found whiteflies and are lethargic by nature. Rugose spiraling whitefly adults can be distinguished by their large size and the presence of a pair of irregular light brown bands across the wings. Males have long pincer-like structures at the end of their abdomen.



MANAGEMENT PRACTICES:

MONITORING:

- Regular survey and monitoring at least at weekly intervals should be conducted for early detection of the pest and decision making based on AESA (considering P:D ratio).
- Encourage build up of the natural parasitoid *Encarsia* sp. Installation of yellow sticky traps @ 5 /acre is recommended to monitor the RSW.
- RSW adults are found to be active during morning between 06.00 A.M. to 10.00 A.M. and in evening dusk time between 6PM to 10.00 P.M., hence Installation of yellow light traps can be done @1 No./acre between 06.00 A.M. to 10.00 A.M. and 06.00 P.M. to 10.00 P.M. to monitor the RSW.

CULTURAL CONTROL:

- Avoid transplanting of affected coconut seedlings.
- Adopt proper spacing as per the recommendation.
- Application of optimum recommended doses of fertilizers on the basis of soil health card (soil-testing).

MECHANICAL CONTROL:

- Coconut leaflets can be dislodged by forced water spray, targeting the lower surface of the leaflets.
- Installation of yellow sticky traps on the palm trunk @ 15 /acre is recommended to manage the RSW.

BIOLOGICAL CONTROL:

- Encourage build-up of parasitoid in the orchards and re-introduce parasitized pupae in the whitefly-infested orchards.
- Conserve and augment predators of RSW such as *Chrysoperla* and *Coccinellids*, which are available in the field.
- Release 1st instar larvae of green lacewing (*Chrysoperla* sp./ *Mallada* sp.) @ 4000/acre.
- Spray of entomopathogenic fungus *Isaria fumosorosea* @ 5ml/l of water mixed with detergent/ Khadi soap @ 5g/l can be done at fortnightly intervals to manage the RSW infestation.

NOTE:

Sooty mould (*Capnodium* sp.) growth on the leaf surface can be flaked out by spraying 2.5% of maida paste solution mixed with detergent/ Khadi soap @ 5g/l. or 1% Starch solution mixed with detergent/ Khadi soap @ 5g/l.

BOTANICALS:

- In severe cases, spray only neem oil 0.5% or NSKE 5% and avoid spraying any form of insecticides.

CHEMICALS:

- Systemic insecticides are absorbed into the vascular system of the tree and since the Spirling Whiteflies are literally sucking the liquid out of a tree's leaves, such a treatment to the base of the tree will deliver a lethal dose of toxin to the insects.
- Once treated, the tree can begin to heal. With proper watering, fertilizing and pruning, the overall health of the tree will return. By treating with a systemic insecticide, instead of a contact insecticide, the need to constantly spray is diminished and long term results are achieved. Systemic insecticides are used viz., Acetamiprid, Clothianidin, Dinotefuran and Imidacloprid.