

Rugose Spiralling Whitefly: an emerging pest problem of coconut in Bastar Zone of Chhattisgarh

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In the major coconut growing States of India, coconut is cultivated essentially in the homestead gardens and small holdings. Bastar region of Chhattisgarh is a non-traditional coconut growing area yet there is a tremendous scope for production and exploration in the region. The coconut palm is attacked by a number of insect pests all round the year. More than 900 species of pests are associated with cultivated and wild coconut palm. This number includes both invertebrates and vertebrates. Of these, red palm weevil, (*Rhynchophorus ferrugineus Olivier*), rhinoceros beetle (*Oryctes rhinoceros L.*), coconut black-headed caterpillar (*Opisina arenosella Walker*) and Rugose spiralling whitefly are the most important devastating insect pests of coconut in major coconut-growing areas.

A survey and monitoring for rugose spiralling whitefly in coconut was carried out in AICRP on Palms, S. G. College of Agriculture and Research Station, Jagdalpur and the farmers' field of Kondagaon and Dantewada districts of Chhattisgarh. The survey was based on typical characteristics of the pest i.e., spiralling pattern and concentric circular egg laying which is covered with white woolly waxy matter underside of the leaflets and fruit along with the presence of their nymphs and adults. The upper side of the leaflets show development of black sooty mould due to the secretion of glistening liquid i.e. honey dew.

Of late, Rugose spiralling whitefly (RSW), *Aleurodicus rugioperculatus Martin* is the latest invasive pest reported on coconut palms from Bastar. RSW is a highly polyphagous pest, which has been found to feed on 118 plant species which include edible plants, palms and weeds (Stocks, 2012) and it has been classified as a serious threat for coconut cultivation in Florida (Stocks and Hodges, 2012; Kumar et al., 2013). In coconut, RSW prefers to colonize on hybrid and dwarf varieties, especially Chowghat Orange Dwarf, Malaysian Orange Dwarf and Gangabondam semi-dwarf. RSW was observed to colonize almost each and every part of the coconut palm including inflorescence, exocarp and entire under surface of leaf lamina.

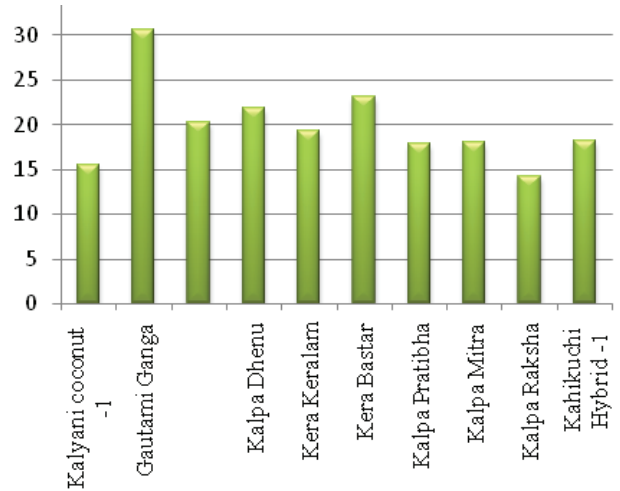


Fig. 1 Average population of RSW on different coconut varieties in Bastar

The rugose spiralling whitefly was initially observed on coconut palm (*Cocos nucifera L.*) from Bastar plateau of Chhattisgarh during the month of September, 2020. Hotter temperatures favour the growth of sucking insects such as whiteflies. The prolonged dry spell during June to September 2020, after deficit rainfall, coupled with decreased relative humidity appears to favour the spread of the pest in coconut plantations. During the survey occurrence of this pest was not observed in the farmer's field of Bakawand, Kondagaon and Dantewada. As per the study of Patel *et al.* (2020), RSW infestation was observed in different varieties of coconut and average population of the pest on coconut varieties revealed that it varied from 14.2 to 30.6 RSW/cm². Perusal of data (Fig. 1 & Table. 1) revealed that the highest population was recorded in Gautami Ganga (30.6/cm²) followed by Kera Bastar (23.2/cm²) while the minimum population in Kalpa Raksha i.e. 14.2/cm². The invasive pest, *A. rugioperculatus* has already been reported to cause significant damage in India. This pest is polyphagous in nature hence current incidence of RSW in Chhattisgarh is alarming as it has a great potential to extend its host range and spread to other coconut growing areas in the Chhattisgarh state.

S. no	Varieties of coconut	Average population of RSW/ cm ²
1.	Kalyani Coconut-1	15.5
2.	Gautami Ganga	30.6
3.	Konkan Bhatye Coconut Hybrid-1	20.2
4.	Kalpa Dhenu	21.9
5.	Kera Keralam	19.3
6.	Kera Bastar	23.2
7.	Kalpa Pratibha	17.9
8.	Kalpa Mitra	18.0
9.	Kalpa Raksha	14.2
10.	Kahikuchi Hybrid-1	18.2

Table1: Average population of RSW on different coconut varieties in Bastar

To conclude, awareness campaign should be further strengthened by all stakeholders for effective reach out of pesticide holiday approach in the bio-suppression and management practices of rugose spiralling whitefly in the Bastar region.

Suggested Management Practices

- Avoid transportation of planting materials from affected area to non affected area to check the spread of the pest.
- Spray Azadiractin 1% @ 1 ml per liter of water with 10 gms detergent 2-3 sprays at 15 days interval.
- Forcibly spray water or detergent + water on leaves to washout sooty mould as well as various life stage of RSW at fortnight interval.
- Installation of yellow sticky traps on palm trunk to attract adult RSW and smears 7 to 10 days interval.
- Release of *Dichochrysa astur* @ 100-150 eggs / palm in case of low incidence and upto 300 eggs / palm during medium incidence for at least 10 % of the infested palms.



Fig. 2 Eggs and Nymphs

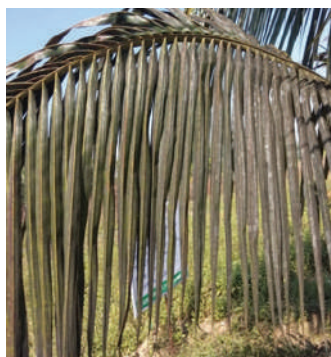


Fig. 3 Sooty Mould Development

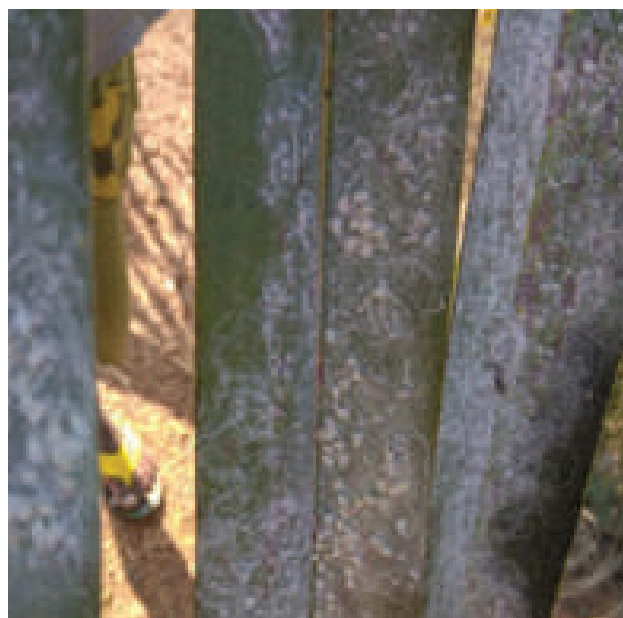


Fig. 4 Adults of RSW

- Release and augmentation of *Encarsia guadeloupae* in affected palms give satisfactory pest suppression.
- Foliar application of entomopathogenic fungi *Isaria fumosorosea* @ 1x10⁸ spores/ml (5gms/ liter of water along with sticker 1 ml/liter).
- Awareness programmes for the farmers so that they easily manage this pest through community approach.
- Avoid Chemical pesticides application to reduce the chances of resistance and pest resurgence problem.

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