Occurrence of invasive Bondar's Nesting Whitefly on coconut in Kerala

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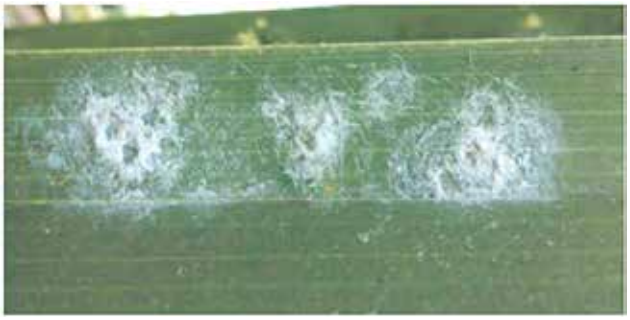
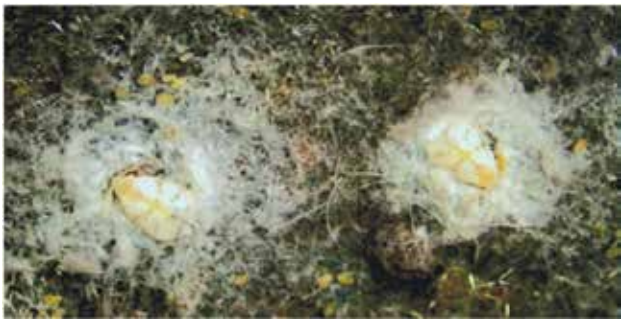


Bondar's nesting whitefly colonies on coconut leaflet

Stalked eggs, crawlers and flat nymphs



BNW on woolly wax nests

Adult BNW with X-shaped oblique grey bands on wings

Whiteflies are sap feeding sucking bugs resembling tiny "moths" that inflict direct feeding injury on plants and serve as vectors of plant diseases or produce significant quantum of honeydew leading to deposits of sooty mould on plant surface interfering with photosynthetic efficiency. Whiteflies are emerging as a major threat in crop production mainly attributed to climate change. More than 440 species of whiteflies from 63 genera are known from India attacking 320 plant species including coconut. In coconut, three species of whiteflies viz., arecanut whitefly (*Aleurocanthus arecae*), spiralling whitefly (*Aleurodicus dispersus)* and rugose spiralling whitefly (*Aleurodicus rugioperculatus*) have been reported so far (Chandrika Mohan *et al.*, 2017). Among the whiteflies reported on coconut, the rugose spiralling whitefly colonized in severe proportion and the impact was higher on palms in terms of sooty mould deposits especially on Chowghat Orange Dwarf variety.

Rugose spiralling whitefly is considered to be introduced from Florida (USA) into Pollachi (Tamil Nadu) and Palakkad (Kerala) during 2016. This pest could establish in all coconut growing tracts of South

India and is recently reported from North eastern state of Assam as well (Chandrika Mohan *et al.,* 2018). Pesticide holiday approach advocated by ICAR-CPCRI in synergy with conservation biological control using the aphelinid parasitoid, *Encarsia guadeloupae* and in *situ* preservation of sooty mould scavenger beetle, *Leiochrinus nilgirianus* could successfully reduce the invasive potential of this non-native pest (Josephrajkumar *et al.,* 2018).

In this context and exactly two years after the appearance of the rugose spiralling whitefly on coconut in our country, we came across a new species of whitefly feeding on the lower surface of palm leaflets. This new whitefly is very small (< 1.0 mm) and has conspicuous X-shaped oblique grey bands on the wings. Nymphs and adults make nesting chambers of woolly wax resembling bird's nest and the adult bugs confine on these nests for egg laying. Presence of woolly wax nests on abaxial palm leaflets is one of the features for pest identification. Adult whitefly lays stalked eggs devoid of woolly wax coating and the nymphs are absolutely flat with well developed fibreglass like projections from the dorsum. Puparium has one cephalic compound pore, six abdominal compound pores and out of which two are reduced. These compound pores possess flower-petal like facets. Male genitalia are very unique with terminal short apicolateral process. Furthermore, molecular characterization of this pest (GenBank Accession No. MK343480) shared 100% similarity with the nucleotide sequences of Bondar's nesting whitefly from Florida, USA. Based on these morphological features and molecular characterization, the new whitefly pest is identified as Bondar's nesting whitefly (BNW), *Paraleyrodes bondari Peracchi*, which is reported in the Indian subcontinent for the first time on coconut palms. Excessive de-sapping by the pest produces honey dew which result in sooty mould deposits on plant surface. BNW incidence was noted in most coconut varieties with nest colonies exceeding 25 per leaflet. Cool minimum temperature (<21^{o}C) and sunny day temperature (>32^{o}C) similar to neotropics might have favoured the establishment of the pest in this region.

BNW has more than 25 susceptible host plants which include banana, avocado, citrus, cassava, custard apple, ornamental Ficus spp. etc. Some grubs of coccinellid beetles were noticed around the BNW colony, however, no parasitoid was recorded from our observation. As with all whiteflies, BNW is of neotropical origin described from citrus for the first time. It was also reported from Florida, USA and from other Pacific regions. Co-existence of *P. bondari* and *Aleurodicus rugioperculatus* on coconut palms infer simultaneous arrival of both these pests from New World region. Polyphagous nature of the non-native BNW warrants stringent quarantine protocols during exchange of planting materials so as to avoid such bio-invasion in future. With the sightedness of coccinellid predators, jet water spray and pesticide holiday approach is advocated to manage this new pest. Farmers need not panic as the pest is not reported to cause economic damage in any of the crops from other countries. Strict quarantine should be enforced in the transport of planting materials to reduce such bio-invasion. ■

Retirement

Smt. K.G.Umadevi, employee of Coconut Development Board retired from the services of the Board on 31st December 2018 on superannuation. She joined the Board in 1989 and has served the Board for around 30 years.

References • *Chandrika Mohan, Josephrajkumar, A., Singh, L.S. and Alpana Das (2018) New Distributional Record of rugose spiralling whitefly on coconut in Kamrup and Nalbari districts of Assam. Indian Cocon. J. 61 (4): 19-21.* • *Chandrika Mohan, Josephrajkumar, A., Merin Babu, Prathibha, P.S., Krishnakumar, V., Vinayaka Hegde and Chowdappa, P. (2017) Invasive rugose spiralling whitefly on coconut. Technical Bulletin No. 117, Centenary series 60. ICAR-CPCRI, Kasaragod, p 16.* • *Josephrajkumar, A., Chandrika Mohan, Poorani, J., Merin Babu, Daliyamol, Krishnakumar, V., Vinayaka Hegde and Chowdappa, P. (2018) Discovery of a sooty mould scavenging beetle, Leiochrinus nilgirianus Kaszab (Coleoptera: Tenebrionidae) on coconut palms infested by the invasive rugose spiralling whitefly, Aleurodicus rugioperculatus Martin (Hemiptera: Aleyrodidae). Phytoparasitica DOI: 10.1007/s12600-017-0635-5.*