

First record of rugose spiraling whitefly, *Aleurodicus rugioperculatus* Martin (Hemiptera: Aleyrodidae) an invasive pest in Assam

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ABSTRACT : Rugose spiraling whitefly (RSW), *Aleurodicus rugioperculatus* Martin (Hemiptera: Aleyrodidae) was observed in several coconut farms in the Pollachi, Tamil Nadu and Palakkad, Kerala in 2016 and subsequently, the incidence and infestation of the RSW was recorded on many other horticultural crops. The origin of RSW was first described from Belize in Central America in 2004. It was first documented as a pest in Florida in urban landscapes in Miami Dade County in March 2009. In Assam, the pest was first noticed in June- July, 2018 in different areas of Kamrup, Nalbari and Darrang districts. First diagnostic visit was made jointly by officials from Department of Agriculture, Govt. of Assam and Scientist from Assam Agricultural University in few villages of Kamrup district on 25 July 2018. The pest was identified with the help of damage symptom, and by consulting different literature and photographs. Heavy infestation of rugose spiraling whitefly and secondary infection of sooty mould were noticed in coconut palms as well as other horticultural crops nearby coconut palms. Almost all the leaves of coconut, banana and other horticultural plants nearby were brownish-black in appearance due to severe growth of sooty mould. In Kamalpur and Balisatra agricultural development circles of Kamrup district 4281 numbers of family were affected by this pest covering more than 450 ha of land. The pest seems to have entered in Assam accidentally through movement of coconut seedling from South India. The deficit monsoon along with prolonged drought could be one of the primary reasons of immediate upsurge of spiraling whitefly during 2018. Emergence of sucking pest as a victim of climate change, thus, warrants close scrutiny.

Key words: Rugose spiraling whitefly, RSW, *Aleurodicus rugioperculatus* Martin, diagnostic visit, coconut, horticultural crops.

With increased global interactions comes the growth of international trade, idea, and culture. International agricultural trade leads to the movement of invasive insect species from one region of the world to others. In India, more than 110 exotic insect species had been reported so far, of which, whiteflies and mealy bugs constitute a major part of invasion. There are 442 species of whiteflies under 63 genera reported in India to feed on numerous agricultural, horticultural and forestry crops (Karthick *et al.*, 2018). During July-August, 2016, yet another invasive insect rugose spiraling whitefly (RSW), *Aleurodicus rugioperculatus* Martin (Hemiptera: Aleyrodidae) was observed in several coconut farms in the Pollachi, Tamil Nadu and Palakkad, Kerala (Karthick *et al.*, 2018). Subsequently, the incidence and infestation of the RSW was recorded on many other horticultural crops. A total of 17 plant species under 11 families were recorded as preferred hosts of *A. rugioperculatus* in South India (Karthick *et al.*, 2018).

The origin of RSW was first described from Belize in Central America in 2004 (Martin, 2004). It was first documented as a pest in Florida in urban landscapes in Miami Dade County in March 2009. The RSW is highly

polyphagous with more than 118 hosts belonging to 43 plant families, including several economically important crops in the United States (Francis *et al.*, 2016).

In Assam, the pest was first noticed in June- July, 2018 in different areas of Kamrup, Nalbari and Darrang districts. People of the affected areas actually observed the sooty mould which they termed as ashes coming from nearby Brick Klein or other industries. A study was, therefore, undertaken in different places of Kamrup district to find out the extent of damage done by RSW.

MATERIALS AND METHODS

First diagnostic visit was made jointly by officials from Department of Agriculture, Govt. of Assam and Scientist from Assam Agricultural University in few villages of Kamrup district on 25 July 2018. The leaf sample of coconut and banana were collected during the visit and kept in the laboratory. The pest was identified with the help of damage symptom, and by consulting different literature and photographs. The survey on RSW infestation was conducted in 4 villages of Kamalpur agricultural development circle and 15 villages in

Balisatra agricultural development circle of Kamrup district of Assam (Table 1).

RESULTS AND DISCUSSION

Heavy infestation of rugose spiraling whitefly and secondary infection of sooty mould were noticed in coconut palms as well as other horticultural crops nearby coconut palms. Almost all the leaves of coconut (Fig. 1), banana (Fig. 2) and other horticultural plants (Fig. 3) nearby were brownish-black in appearance due to severe growth of sooty mould. In Kamalpur and Balisatra agricultural development circles of Kamrup district 4281

numbers of family were affected by RSW covering more than 450 ha of land (Table 1). The pest seems to have entered in Assam accidentally through movement of coconut seedling from South India. The deficit monsoon along with prolonged drought could be one of the primary reasons of immediate upsurge of RSW during 2018. Emergence of sucking pest as a victim of climate change, thus, warrants close scrutiny. Coconut and arecanut are grown as the homestead crop in Assam with intercrops like banana, citrus, papaya, litchi, guava, mango, ornamental plants, vegetables, etc. The sooty mould developed on coconut and other crops is also a major concern to the farmers.

Table 1: *Aleurodicus rogioperculatus* affected villages in Kamrup district of Assam During June-July, 2018

Agricultural development Circle	Affected Revenue villages/GP	Crop affected	Farm family affected	Plant/area affected
Kamalpur	Revenue Village: a) Barujani, b) Digunpar c) Athgaon d) Bardekpar	Major crops: Coconut, arecanut, banana, Other crops: Citrus, papaya, betel vine, black pepper, colocasia,	550 no.	Coconut: 1700 no. Arecanut: 3000 no. Banana: 6300 no. Others: 30 ha
Balisatra	a) Baranghai GP (5 villages) b) Koyan Barpulla GP (7 villages) c) Dhuhibala GP (3 villages)	litchi, ber, guava, mango, ornamental plants, vegetables, etc.	1328 no. 930 no. 1473 no.	170 ha 112 ha 138 ha



Fig. 1: Photographs of damage caused by *Aleurodicus rogioperculatus* Martin on coconut



Fig. 2: Photographs of damage caused by *Aleurodicus rogioperculatus* Martin on banana



Fig. 3: Photographs of damage caused by *Aleurodicus rogioperculatus* Martin on citrus, hibiscus, cucumber, papaya, mango and arecanut

Parasitized nymphs/puparia and predatory mites (unidentified) were found in the collected samples (leaves).

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Received: July 12, 2019

Accepted: July 29, 2019