

Host Range and Occurrence of Woolly Whitefly *Aleurothrixus Floccosus* (Maskell) in India

Ipsita Samal¹ and Bhupen Kumar Sahu²

¹Ph.D. Scholar, Division of Entomology, IARI, New Delhi, India.

²M.Sc. (Ag.) Department of Sericulture, AAU, Jorhat, Assam, India

SUMMARY

Adult woolly whiteflies are small, flying insects resembling small white-winged moths with a yellowish-white abdomen and a light dusting of white powder (scales). The adults are about 1.5 mm in length and can be found roosting on the undersides of fully expanded leaves. Adult woolly whiteflies are not as active as most other whitefly species and when disturbed, will reluctantly fly and will usually quickly resume roosting. Adult woolly whiteflies may live as long as 24 days. Its recent invasion in India has increased the importance of the study of life cycle and geographical distribution.

INTRODUCTION

A. floccosus appears to be of neotropical origin. From this region *A. floccosus* possibly moved northwards to the USA and eastwards to the Canary Islands and West Africa. In the early 1970s *A. floccosus* was reported in Spain and southern France, and it was later recorded in Morocco. In India, the whitefly specimens were initially collected from different places in Kerala by scientists of University of Agricultural and Horticultural Sciences, Shivamogga; morphological and molecular identification was carried out at Institute of Wood Science and Technology, Bengaluru and NBAIR, Bengaluru. The identification of *A. floccosus* was done through taxonomic studies on morphological characters of puparium and reconfirmed through DNA barcoding of adult whitefly using partial (658 bp) mitochondrial cytochrome oxidase 1 (CO1) gene (Sundararaj et al., 2019).

Distribution and hosts/Species affected

A. floccosus can be regarded as a polyphagous whitefly species, having been recorded on more than twenty different plant genera of various families (Martin and Mound, 2007). However, in the Mediterranean region where the whitefly was introduced, it infests almost exclusively species of the genus *Citrus*.

Life cycle

Eggs: Eggs are very small, less than 0.2 mm in length. Usually eggs are laid in circles or semicircles. In this manner it is easier to detect the egg stages which are usually also accompanied by an area of waxy dust.

Nymphs: *A. floccosus* goes through four nymphal instars, the last of which becomes the pupal stage. The nymphal stages are very similar to each other and differ mainly in size. Nymphs secrete a woolly covering of rather dirty-looking, flocculent white wax. Under the wax covering, the nymphs may be pale yellow or, in some populations, brown.

Pupae: The puparium is the most important stage for identification. It is elongate in form, usually of a light-cream colour, but very rarely black individuals can also be found. The length varies from 0.8 to 0.92 mm and the width is 0.55-0.65 mm.

Adults: As with most whitefly species, adults are not used for identification, only pupal cases being used for such a purpose. Adult whiteflies are usually white, always winged, with waxy secretions on their bodies, offering few diagnostic features for identification purposes.



Fig.1: Adult

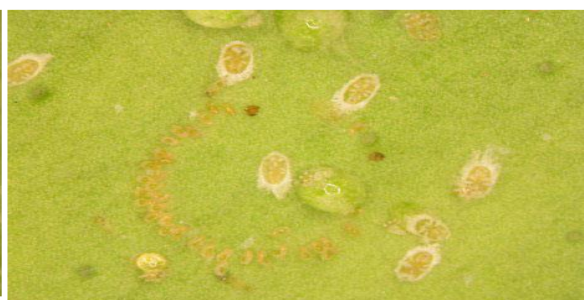


Fig.2: Nymphs of *A. floccosus*

(Source: Kerns, D. et al., 2001)

Symptoms

Leaf undersides are coated with immature stages covered with off-white flocculent wax and honeydew droplets. Surfaces below colonies are sticky with excreted honeydew, on which black sooty mould often develops. The white adults fly about actively when disturbed. Dense colonies on young citrus leaves cause some slight rolling of the leaf. Woolly whiteflies suck phloem sap, causing leaves to wilt and drop when populations are large. Honeydew droplets collect dust and support the growth of sooty mold. Large infestations where copious amounts of honeydew are produced, can result in the blackening of entire trees. This reduces photosynthesis, resulting in decreased fruit size. Honeydew and sooty mold can also contaminate the fruit. Although this contamination can be washed off at the packing shed, harvest is slowed in infested groves and harvest crews are hesitant to pick heavily contaminated fruit.

Control

Cultural: Pruning & hedging. Light infestations can be greatly reduced by hedging. This technique has proven to be especially effective on trees ten years old or younger. Additionally, pruning will aid in opening up the canopy to maximize spray penetration and coverage.

Biological: General Predators and Parasitoids. Among parasitoids, an Eretmocerus sp. can be effective. Moreover, Yuma spider mite and Tydeus spp. are common predaceous mites of woolly whitefly. General insect predators found feeding on woolly whitefly include: lacewings, coccinellid beetles, nabids, Orius, and six-spotted thrips. When Eretmocerus sp. adults, parasitoid eclosed pupae, and or predators are common, chemical control is usually not necessary.

CONCLUSION

Identification of the insect including its geographical distribution, infesting stages and symptoms of damage can be helpful in managing the adverse impact of the invasive pest.

REFERENCES

- Sundararaj, R , Selvaraj, K , Kalleshwaraswamy, C M , Ranjith, M , Sumalatha, B V. 2019. Occurrence of Woolly Whitefly *Aleurothrixus floccosus* (Maskell) in India.
- Kerns, D., Wright, G. and Loghry, J. 2001. Woolly Whiteflies (*Aleurothrixus floccosus*) in “Citrus Arthropod Pest Management in Arizona”.
- Martin J H, Mound L A. 2007. An annotated check list of the world’s whiteflies (Insecta: Hemiptera: Aleyrodidae). *Zootaxa* 1492: 1- 84