

# Cloudywinged Whitefly, *Dialeurodes citrifolii* (Morgan) (Insecta: Hemiptera: Aleyrodidae: Aleyrodinae)<sup>1</sup>

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## Introduction

Cloudywinged whitefly, *Dialeurodes citrifolii* (Morgan), is one of the most common whiteflies associated with citrus in Florida. A native of Asia, it was described by Morgan in 1893 and later by Berger in 1909 from specimens collected in Florida.

## Synonymy

*Aleyrodes citrifolii* Morgan 1893

*Aleyrodes nubifera* Berger 1909

*Dialeurodes citrifolii* (Morgan) (Jensen 2001)

## Distribution

This species occurs in Barbados, Brazil, Bermuda, China, Cuba, Hong Kong, Jamaica, Japan, Malaysia, Puerto Rico, Trinidad, Venezuela, Vietnam, and the United States (Arkansas, Florida, Louisiana, North Carolina, Texas) (Mound and Halsey 1978).

## Description

### Adults

The adults are very small, yellowish, with a cloudy spot on the apex of the forewing and dusted with white powdery wax. When at rest the wings are laid back against the abdomen. Males are smaller than females, with the mean body length 1.28 mm for females and 1.04 mm for males (Quaintance and Baker 1917).



Figure 1. Adult cloudywinged whiteflies, *Dialeurodes citrifolii* (Morgan). Credits: Ru Nguyen, Division of Plant Industry

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## Pupae

Pupae are oval, flattened, membranous, and yellowish-green without an orange spot on the back. The pupal case is opaque after emergence of the adult, and the case may collapse and lose its shape. *Dialeurodes citrifolii* pupae are readily confused with *Dialeurodes citri*, the [citrus whitefly](#), but *Dialeurodes citrifolii* is said to be somewhat larger (Hamon 2001).

## Nymphs

The immature stages are flat, elliptical in shape and light yellowish in color, and prefer the underside of the leaf. Three larval and one pupal stage occur in the life cycle. The first stage is 0.31 mm long and 0.20 mm wide, second stage 0.58 mm long and 0.38 mm wide, third stage 0.88 mm long and 0.66 mm wide, and pupa (4th stage) 1.44 mm long and 1.09 mm wide (Peracchi 1971).

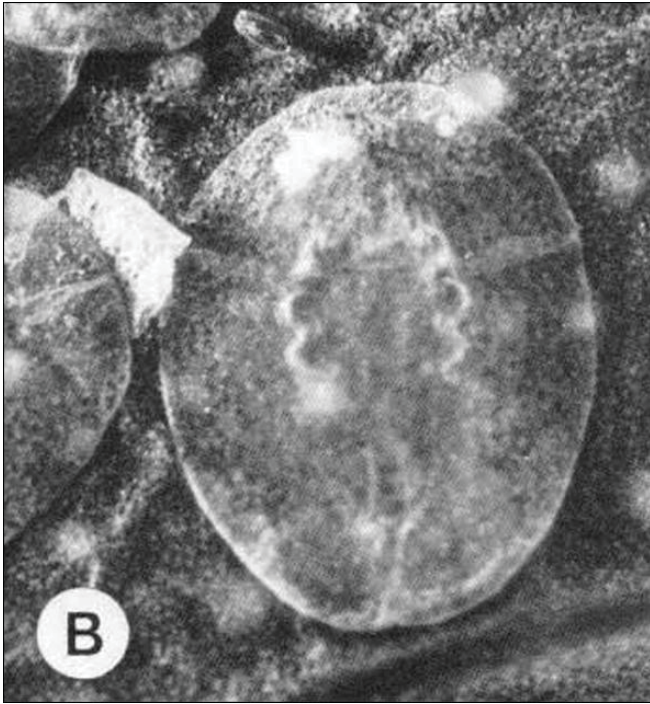


Figure 2. Immature stages of the cloudywinged whitefly, *Dialeurodes citrifolii* (Morgan).

Credits: Division of Plant Industry

## Eggs

The eggs are tiny (0.25 mm long), brown, elliptical, elongate in shape and most commonly laid on young leaves. The eggs can readily be separated from *Dialeurodes citri* because *Dialeurodes citrifolii* eggs are dark brown and have a hexagonal pattern on the surface, while *Dialeurodes citri* eggs are lighter in color and nearly smooth (Hamon 2001).



Figure 3. Eggs of the cloudywinged whitefly, *Dialeurodes citrifolii* (Morgan).

Credits: Ru Nguyen, Division of Plant Industry

The life cycle from egg to adult ranged from 51 to 334 days with three generations per year in Florida (Morrill and Back 1911).

## Identification

The identification key provided here is designed to identify the four major species of whiteflies that commonly infest citrus in Florida. Another key that covers 16 species of whiteflies that may infest Florida citrus is available online. This key, developed by the Florida Department of Agriculture and Consumer Services' Division of Plant Industry, uses color photographs of nymphs to assist in identification. It is available at <https://www.fdacs.gov/Agriculture-Industry/Pests-and-Diseases/Plant-Pests-and-Diseases/Citrus-Health-Response-Program/Key-to-Whitefly-of-Citrus-in-Florida>.

**1a.** The whitefly adult is white or white with dark spots on the wings. Nymphs are difficult to see or identify. . . . 2

**1b.** The whitefly adult is slate blue in color, eggs are present and laid in spirals. Nymphs are black with prominent spines. . . . [citrus blackfly](#)

**2a.** The whitefly adult is all white without any dark spots on wings. . . . [citrus whitefly](#)



**2b.** The whitefly adult is white with a darkened area at the end of each wing. Occasionally a yellow fungus is present. . . . cloudywinged whitefly

**2c.** The whitefly female adult is all white and is surrounded by waxy filaments. Eggs are laid in a circle with the female at rest in the center. . . . wooly whitefly

## Economic Importance

The whitefly damages citrus by sucking sap from the leaves. Also, honeydew excreted by the whiteflies is a medium for the growth of sooty mold fungi. The sooty mold can cover the fruit and foliage so that it interferes with photosynthesis and requires that fruit be washed before marketing. In 1977, *Encarsia lahorensis* became established in Florida, and by 1980 had suppressed the population of *Dialeurodes citri* (Nguyen and Sailer 1979, Sailer et al. 1984). Since then, *Dialeurodes citrifolii* has gradually replaced *Dialeurodes citri* on citrus in central and southern Florida.



Figure 4. Citrus leaves with sooty mold growing on honeydew excreted by the citrus whitefly, *Dialeurodes citri* (Ashmead).  
Credits: University of Florida

## Hosts

Citrus is the most important host of this species. However, it can be found on *Ficus nitida* (Morrill and Back 1911) and *Gardenia* sp.

## Natural Enemies

There are several natural enemies of *Dialeurodes citrifolii*, including:

- Parasites: *Encarsia pertrenua* (Silvestri) (reported in Vietnam) and *Encarsia sternua* (Silvestri) reported in Macao) (Silvestri 1927, Fulmex 1943).
- Predators: a lady beetle: *Delphastus catalinae* Horn (Mound and Halsey 1978).

- Pathogens: *Aschersonia aleyrodis* Webber, *Aschersonia flavo-citrina* B. Henning, and *Aegerita webberi* Fawcett (Pratt 1958). *Aschersonia aleyrodis* (red aschersonia) is the most common pathogen on *Dialeurodes citrifolii* in central and southern Florida.



Figure 5. Adult coccinellid predator of whitefly nymphs, *Delphastus catalinae*.  
Credits: Kim Hoelmer, USDA



Figure 6. Red, *Aschersonia aleyrodis*, and yellow, *Aschersonia goldiana*, *Aschersonia* fungi attacking immature whiteflies.  
Credits: University of Florida

## Chemical Control

Whiteflies also are controlled by sprays applied primarily for control of scale insects. Spraying of commercial citrus exclusively for whitefly control is seldom practiced in Florida. Recommended control measures for commercial or dooryard citrus are significantly different. Please consult the specific management guide for your situation.

### Citrus Management Guide for Whiteflies in Commercial Groves

It is important to note that spraying with copper for control of harmful fungal diseases will also inhibit growth of beneficial fungi resulting in an increase in whitefly populations. Also, more than one application of sulfur per

year can have an adverse effect on parasites. Spray oil has some insecticidal properties but is primarily used to remove sooty mold that grows on the fruit and leaves.

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