

Leaf-Gall Thrips of *Ficus* *Gynaikothrips ficorum* (Marchal) and *Gynaikothrips uzeli* (Zimmerman) (Insecta: Thysanoptera: Phlaeothripidae) ¹

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Introduction

Leaf-gall thrips in the genus *Gynaikothrips* originating in southeast Asia infest *Ficus*. This is not a recent introduction. Specimens collected in Florida in 1887 are in the US National Museum (Denmark, 1967). Watson (1923) listed the genus in his key to thrips of North America. Two species, recognized as distinct by Priesner (1939) based only on differences in the length of the pronotal setae, are established in Florida: *Gynaikothrips ficorum* (Marchal) and *Gynaikothrips uzeli* (Zimmerman). However, whether or not they are distinct species is uncertain. Populations in Southeast Asia exhibit considerable variation in the lengths of the pronotal setae, and Mound et al. (1996) suggested that *Gynaikothrips ficorum* is probably a form of *Gynaikothrips uzeli* that has been spread by the horticultural trade. *Gynaikothrips ficorum* and *Gynaikothrips uzeli* are commonly called Cuban laurel thrips and weeping fig thrips, respectively.

Distribution

While most *Gynaikothrips* spp. are of Asian origin, species in this genus have been described from Africa. *Gynaikothrips ficorum* is pantropical, appearing wherever *Ficus microcarpa* L. f. is planted (Denmark 1967). It is recorded from Algeria, the Canary Islands, Colombia,

Cuba, Dominican Republic, Guam, Taiwan, Ecuador, India, Java, Mexico, Nassau (Bahamas), Nicaragua, Israel, Palestine, Panama, Puerto Rico, El Salvador, Thailand, Spain, Sicily, and the United States. In the US, it is recorded from California, Florida, Hawaii, and Texas. Once it became established in Florida, *Gynaikothrips uzeli* was rapidly spread on *Ficus benjamina* L. originating from nurseries in southern Florida (Held et al. 2005). It has been reported from 10 states in the continental US: Hawaii, Puerto Rico, Trinidad, Mexico, Colombia, Argentina, and Costa Rica (Cabrera-Asencio et al. 2008; Held and Boyd 2008a; de Borbon and Agostini 2011).

Description

The life cycle takes about 30 days (Arthurs et al. 2011). Adults migrate to terminal leaves and establish folded-leaf galls within 2 to 3 days of infestation. Mating, egg laying, and a complete generation develop within a single gall. Adults exit galls within a few days of emergence, and migrate to new terminal leaves, either on the same or different terminal stem, to begin a new generation.

Egg

The egg is cylindrical with rounded ends, smooth, and is a translucent white.

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Figure 1. Several life stages *Gynaikothrips*. Black forms are adults, white-yellow forms are larvae and pupae, and white, capsule-shaped forms are eggs.

Credits: Paul M. Choate, UF/IFAS

Larva

There are two larval instars. The first instar is small and translucent white. The second instar is larger, light yellow and the posterior tube is dark and is held pointing up. The second instar is similar to the adult in size and shape. Both the first and second instars have red eyes.

Prepupa and Pupa

The prepupa has wing buds that are externally visible. The pupa has longer wing buds and the antennae are folded back over the head.



Figure 2. Pupae of *Gynaikothrips* are easily distinguished from prepupae by their longer wing buds and the antennae folded back over the head.

Credits: Paul M. Choate, UF/IFAS

Adult

The adult varies from about 2.6 mm to 3.6 mm in length and is dark yellowish-brown to black. With the exception of the legs and last abdominal segment, dorsal striations

are shown on the adult. Breeding is continuous. Although the adult moves or flies rapidly when disturbed, it remains on or close to the leaves most of the time. They are also active flyers on hot days. Canizo (1945) and de Borbon and Agostini (2011) give detailed measurements of *Gynaikothrips ficorum* and *Gynaikothrips uzeli*, respectively.



Figure 3. Adult *Gynaikothrips*. Notice the empty egg sac (bottom right) and the exuviae, the sloughed exoskeleton of the larvae.

Credits: Paul M. Choate, UF/IFAS

Hosts

Chinese banyan, *Ficus microcarpa* L. (Urticales: Moraceae) is host for *Gynaikothrips ficorum* (Mound et al. 1996). Weeping fig, *Ficus benjamina* L., is host for *Gynaikothrips uzeli* (Arthurs et al. 2011). Wolcott (1953) says that most species of *Ficus* are largely or entirely immune to infestations, but when the thrips become abundant, they will feed on certain non-host plant species. Cuban laurel thrips are an occasional pest of orchids (Nixon 1999).

Refer to Hoddle et al. (2012) for more information on *Gynaikothrips*, including a key to the species of adult thrips. [Key to eleven species of thrips.](#)

Damage and Economic Importance

Adult thrips use their sucking mouthparts to feed on the tender, light-green leaves, causing sunken purplish-red spots. Feeding results in a specific, directed growth reaction that causes the leaf to roll, or the leaf may fold along the midrib. The curled leaf becomes tough as it yellows, sometimes dropping during rainy or windy weather. Leaves eventually drop from the plant prematurely. Infested trees will not be killed, but the ornamental value of the plant is reduced markedly. The thrips rarely are annoying but occasionally may bite people. Some countries restrict the importation of plant material intercepted at ports-of-entry

when they are infested with *Gynaikothrips ficorum* or *Gynaikothrips uzeli*.

Some exotic *Ficus* species are listed as invasive in Florida. Bennett (1995) suggested that *Gynaikothrips* potentially may serve as biological control agents of these unwanted invaders. Refer to Mound (2013) for more information on thrips and galls, including leaf-gall thrips of *Ficus*.



Figure 4. Injury on the leaves of *Ficus* due to feeding by *Gynaikothrips*. Credits: Paul M. Choate, UF/IFAS

Management

Pest status, the intensity of management, and the types of tactics differ in landscape and commercial production. Considerable injury is generally tolerable on landscape plantings of *Ficus* whereas detectable populations or plant injury on nursery plants is generally intolerable.



Figure 5. Nymph of the minute pirate bug, *Orius insidiosus* (Say). Credits: James F. Price, UF/IFAS

Biological Control

Montandoniola confusa Streito and Matocq (Hemiptera: Anthocoridae) is the most widespread and important natural enemy in the southeastern US. It was found in Florida in 1990 (Dobbs and Boyd 2006), and incorrectly identified as *Montandoniola moraguesi* (Bennett 1995; Pluot-Sigwalt

et al. 2009). The arrival of this species originally from the Philippines appears to be completely serendipitous. It is a very effective predator of *Gynaikothrips*, reducing populations more than 95%, and leaf galls by 77% (Arthurs et al. 2011); therefore, relying on this natural enemy as a biological control is the best option in the landscape. The native anthocorid *Orius insidiosus* (Say) is an excellent predator of many species of thrips, but it is not effective in reducing the *Gynaikothrips* in the leafgalls. Another thrips described from India, *Androthrips ramachandrai* Karny (Thysanoptera: Phlaeothripidae), has become established in the Americas, from the United States to Argentina. This thrips inhabits the leaf-galls and is an effective predator of *Gynaikothrips* (de Melo et al. 2013). Refer to Boyd and Held (2006) and de Borbon and Agostini (2011) for more information on *Androthrips ramachandrai*.

Other potential biological controls include green lacewing larvae, bigeyed bugs, damsel bugs, ladybird beetles, parasitic wasps, predatory mites, and *Verticillium* (a fungal pathogen) (Padrick 2004; Held et al. 2005; Dobbs and Boyd 2006).

Adult and immature of *Montandoniola moraguesi* (Puton), a predator of the Cuban laurel thrips, *Gynaikothrips ficorum* (Marchal), shown here with an alternate host *Gynaikothrips uzeli* (Zimmerman 1900).



Figure 6. Adult and immature of *Montandoniola confusa*, a predator of *Gynaikothrips*. Credits: L. J. Buss, UF/IFAS

Cultural Control

Replacing *Ficus microcarpa* and *Ficus benjamina* with a resistant species of *Ficus* probably would be the best and

most lasting control of this pest. Because both species only attack the tender new foliage, the new growth can be pruned to remove injured leaves and to suppress the thrips population.

Chemical Control

Insecticides are available that are effective against *Gynaikothrips* on *Ficus* (Held and Boyd 2008b). Systemic insecticides provide better control of thrips in galls. Broad-spectrum insecticides are detrimental to natural enemies that have the potential to naturally maintain populations of *Gynaikothrips* at relatively low numbers in the landscape (Arthurs et al. 2011). Insecticides are frequently the only option in nurseries considering the very low level of injury that is acceptable in domestic and international markets. University of Florida trials have shown that soil drench with certain systemic insecticides is effective, whereas foliar applications are not. Contact your county extension office for specific insecticide recommendations.

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