



CITY OF
FORT LAUDERDALE

City Manager's Office

Memorandum

Memorandum No: 11-308

Date: September 28, 2011

To: Honorable Mayor and Commissioners

From: Lee R. Feldman, ICMA-CM, City Manager

Re: Rugose Spirling Whitefly

This memorandum has been prepared to provide information on the prevalence of whitefly infestation in Fort Lauderdale and to address methods for dealing with this situation. Rugose Spirling Whitefly (RSW), previously known as the Gumbo Limbo Spirling Whitefly, was first found in Miami-Dade County in March 2009. The RSW is larger and slower than the Ficus Whitefly making it more visible. It also has a wider range of host plants, allowing the population to grow at a faster rate. Currently, populations have been identified in southwest and southeast Fort Lauderdale and the Victoria Park area. In talking with a Broward County Extension and Education Agent, RSW is throughout Broward County.

RSW is not as destructive as the Ficus Whitefly since it usually does not kill the host plant or cause branch dieback. Most of the harm is limited to cosmetic damage – a build-up of a white waxy substance on the underside of the leaves and black sooty mold. The waxy substance protects the eggs and the black sooty mold is a result of the RSW excrement. Thus far, RSW has been found on the following plants: Gumbo limbo, Black Olive, Live Oak, Pink Tabebuia, Calophyllum, most palms, cocoplum, firebush, Green Island Ficus and Bird-of-Paradise.

Treatment for RSW is similar to treatment of the Ficus Whitefly. During the last few weeks, the Parks and Recreation Department has been using systemic insecticides labeled for professional use containing either one of the active ingredients Imidacloprid or Clothianidin. Application has been mainly by soil drench where the insecticide is mixed with water and applied to the root zone. These types of insecticides take about three weeks to reach the leaves and become effective against the insects and then last for nine to 12 months. This is consistent with the recommendations of the University of Florida IFAS and Extension. Foliar spray on large trees has not been used nor is it recommended because of drift and possible impact on natural enemies of RSW and other beneficial insects. Areas that have been treated are Ponce de Leon Boulevard, East Las Olas Boulevard, State Road 84 and the South Andrews Avenue medians. Parks in the Southwest and Southeast are currently being treated.

Tropical whiteflies such as the RSW are not cold tolerant and when the temperature drops below 50 degrees whiteflies slow down both in mobility and reproduction and if it gets colder, die. If the Ficus Whitefly infestation serves as an example, we had one year where the population exploded but due to cooler weather and natural predators in the following years, the population has only achieved a fraction of the first year and is hardly noticeable now. Two very good informational websites are attached that can provide more information for homeowners and private properties.

Attachment 1:

<http://trec.ifas.ufl.edu/mannion/pdfs/Gumbo%20Limbo%20Spiraling%20Whitefly.pdf>

Attachment 2:

http://monroe.ifas.ufl.edu/pdf/Hort/GLSW_Factsheet-Guide_for_HO.pdf

cc: Stanley D. Hawthorne, Assistant City Manager
Susanne M. Torriente, Assistant City Manager
Harry A. Stewart, City Attorney
Jonda K. Joseph, City Clerk
John C. Herbst, City Auditor
Chaz Adams, Acting Public Information Director



Rugose Spiraling Whitefly (previously Gumbo Limbo Spiraling Whitefly) A New Whitefly in South Florida



Adult whitefly

all in Miami-Dade County. It will likely spread to other southern Florida counties.

NOTE: This is not the same whitefly (fig whitefly) that is currently causing defoliation and branch dieback of figs in south Florida.

Host Plants: This whitefly appears to have a very broad host range from palms to woody ornamentals and fruits. Thus far, it has been seen on gumbo limbo (*Bursera simaruba*), *Calophyllum* species, black olive (*Bucida buceras*), copperleaf (*Acalypha wilkesiana*), broadleaf arrowhead (*Sagittaria latifolia*), cocoplum (*Chrysobalanus icaco*), Brazilian pepper (*Schinus terebinthifolius*), wax myrtle (*Myrica cerifera*), live oak (*Quercus virginiana*) and mango (*Mangifera indica*). It has also been reported on several palms which include areca palm (*Dypsis lutescens*), *Veitchia* species, and coconut (*Cocos nucifera*). Additional hosts are likely to be added to the current list.

Biology: There is little information on the biology of this new whitefly, however, research is ongoing to describe the life cycle and host range. This whitefly is closely related to giant whitefly, *Aleurodicus dugesii*, and shares some



Adult whiteflies

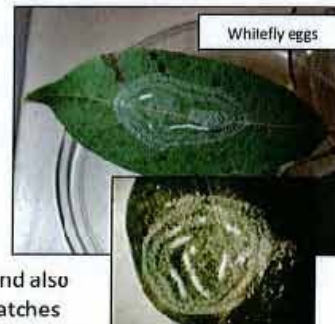
similarities. Like giant whitefly, the adult is about 3 times larger than other whiteflies that occur in the U.S., and are more docile (slower moving) than other types of whiteflies. The adult whiteflies congregate on the undersides of the leaves to feed and reproduce.

The female whitefly lays her eggs in a spiral pattern on the leaves and also deposits a white, waxy substance on the eggs. The crawler stage hatches

What are Whiteflies?

They are small, winged insects that belong to the Order Hemiptera which also includes aphids, scales, and mealybugs. These insects typically feed on the underside of leaves with their "needle-like" mouthparts.

Whiteflies can seriously injure host plants by sucking nutrients from the plant causing wilting, yellowing, stunting, leaf drop, or even death. There are more than 75 different whiteflies reported in Florida.



Whitefly eggs



from the eggs and crawls around before it starts to feed with its "needle-like" mouthparts. This stage is very small and difficult to see.



Whitefly immature stages

The crawler will molt and go through several immature stages that are oval and initially flat, then more convex. These stages do not resemble a typical insect. Some of these immature stages will secrete long white filaments of wax. It will likely survive year round in south Florida.



Whitefly pupae

Plant Damage: The most noticeable symptoms of an infestation of this whitefly is the abundance of the white, waxy material covering the leaves and also excessive sooty mold. Like other similar insects, these whiteflies will produce "honeydew", a sugary substance, which causes the growth of sooty mold. The actual effect of an infestation on the health of a plant is unknown; however, whiteflies in general can cause plant decline, defoliation and branch dieback.



Infested palm



Infested gumbo limbo



Sooty mold on black olive

Management in the Landscape: Often, when new pests arrive, they can reach very high populations and can be extremely damaging. It is not uncommon, however, that after several years, the impact is greatly reduced. Although it may be necessary to use insecticides for this pest, it is very important to understand the importance of natural enemies and the need to focus on long-term, biologically based management.

- Monitor plants for early signs of an infestation because it will be easier to manage the pest before it builds to high populations and causes major damage. If you have an infestation on a tree, be sure to search nearby trees as well because this whitefly feeds on many types of trees.

- In the landscape, one parasitoid attacking this whitefly has been identified, *Aleuroctonus vittatus* (Eulophidae), at very high levels. Awareness of natural enemies is very important so they are not also killed while trying to control the whitefly. Protecting natural enemies is a critical component in the long-term control of this pest. Broad spectrum or persistent insecticides often kill a high proportion of predators and parasites, particularly when applied as a foliar spray. Carbamates (i.e. carbaryl), organophosphates (i.e. malathion) and pyrethroids (i.e. bifenthrin, cyfluthrin) are especially toxic to natural enemies.



Parasitized whitefly pupae



Parasitoid



- You may achieve excellent control with one of the methods listed below, but remember the white, waxy material and the sooty mold on the plant will take time to wear off unless physically washed off.
- Washing plants off with water can be an effective tool to help manage whiteflies for small infestations or small plants. But, for it to be effective, you must remove the immature stages and eggs from the leaves with the wash.
- Using a **horticultural oil** or **insecticidal soap** can also help control this pest. These types of products are strictly contact so thorough coverage of the infested leaves is required. Typically, several applications are required 7-10 days apart. Be careful about using these types of products under high temperatures because they can cause damage to plants.
- If the infestation is large, an insecticide may be needed to control the whitefly population. It is extremely important to use the appropriate insecticides, methods, and timing in order to get the best control with the least amount of detriment to the natural enemies or the environment. There are several insecticide options for both professional use (Table 1) and homeowner use (Table 2). Many of the insecticides for professional use are available in more than one formulation (i.e. wettable powder, liquid, soluble granules, granules, pellets) so you can choose the best fit for your situation.
- Contact insecticides are typically sprayed on the foliage or other infested parts of the plant or in the soil for soil-dwelling insects. Depending on the insecticide, either the insect must come into contact with the insecticide or must feed on the plant with the insecticide. Spray coverage must be thorough to get the best results, particularly in cases like this when the insect is primarily on the underside of the leaves. In general, foliar sprays are active for a few weeks and usually require more than one application. However, some of these products can be very useful for quick knockdown which can be very important with bad infestations.
- A systemic insecticide can be applied directly to the infested plant or to the soil. Soil applications include drenching the soil, spreading a granular formulation, or burying a pellet. Some products can also be applied as a basal trunk spray or injection into the trunk. Systemic insecticides can also be sprayed on the foliage, but often provide longer control when applied to the soil or trunk. However, it is not recommended to use the same insecticide (active ingredient) on the leaves that you use in the soil or on the trunk.
- Misuse or overuse of any insecticide can cause problems such as insecticide resistance, secondary pest problems, environmental contamination, and detrimental effects on non-target organisms. The **site** and **method of application** must be on the insecticide label. Always follow the label directions – **“The label is the law”**. If it is necessary for you to apply several applications of insecticides, it is recommended to rotate among different chemical classes.



Table 1. Insecticides labeled for professional use against whiteflies in Florida

Active Ingredient	Chemical Class	Trade Name(s)	Contact or Systemic
Abamectin	Avermectins	Avid	Contact
Acephate	Organophosphate	Orthene	Systemic
Acetamiprid	Neonicotinoid	TriStar	Systemic
Azadirachtin	Botanical	Azatin; Azatrol	Contact
<i>Beauveria bassiana</i>	Microbial	Botanigard	Contact
Bifenthrin	Pyrethroid	Bifenthrin Pro; Ornyx; Talstar	Contact
Buprofezin	IGR	Talus*	Contact
Carbaryl	Carbamate	Sevin	Contact
Clothianidin	Neonicotinoid	Arena; Aloft**	Systemic
Cyfluthrin	Pyrethroid	Tempo; Decathlon*	Contact
Cypermethrin	Pyrethroid	Demand	Contact
Deltamethrin	Pyrethroid	DeltaGard	Contact
Diflubenzuron	IGR	Acept*; Dimilin*	Contact
Dinotefuran	Neonicotinoid	Safari	Systemic
Fenoxycarb	IGR	Preclude	Contact
Fenpropathrin	Pyrethroid	Tame	Contact
Flonicamid	Antifeedant	Aria*	Contact
Fluvalinate	Pyrethroid	Mavrik; Aquallow	Contact
Imidacloprid	Neonicotinoid	Marathon*; Merit; CoreTect; Discus* **; Allectus**	Systemic
Lambda-cyhalothrin	Pyrethroid	Scimitar	Contact
Malathion	OP	Malathion	Contact
Novaluron	IGR	Pedestal*	Contact
Paraffinic Oil	Oil	Horticultural Oil	Contact
Soap	Soap	Insecticidal Soap	Contact
Pymetrozine	Antifeedant	Endeavor	Contact
Pyridaben	Acaricide	Sanmite	Contact
Pyriproxyfen	IGR	Distance	Contact
S-Kinoprene	IGR	Enstar II*	Contact
Spinosad	Microbial	Conserve	Contact
Spiromesifen	IGR	Forbid 4F; Judo*	Contact
Thiamethoxam	Neonicotinoid	Flagship; Meridian	Systemic

* For production nursery, greenhouse and/or interiorscape use only.

**Product also contains a pyrethroid



Table 2. Insecticides labeled for homeowner use against whiteflies in Florida

Active Ingredient	Chemical Class	Trade Name(s)
Bifenthrin	Pyrethroid	Ortho Bug-B-Gon Max Lawn & Garden Insect Killer
Carbaryl	Carbamate	Sevin
Cyfluthrin	Pyrethroid	Bayer Advanced Rose & Flower Insect Killer; Schultz Lawn & Garden Insect Killer
Dinotefuran	Neonicotinoid	Green Light Tree & Shrub Insect Control with Safari
Imidacloprid	Neonicotinoid	Bayer Advanced Lawn Complete Insect Killer; Bayer Advanced Tree & Shrub Insect Control ; Ortho Max
Lambda-cyhalothrin	Pyrethroid	Spectracide Triazicide Once & Done Insect Killer
Malathion	Organophosphate	Green Light Malathion; Ortho Malathion Plus Insect Spray
Neem oil	Botanical	Bonide Safer BioNeem; Green Light Neem; Green Light Rose Defense; Southern Ag Triple Action Neem Oil
Paraffinic oil	Biorational	Sun Spray Horticultural Oil
Permethrin	Pyrethroid	Hi-Yield Indcor/Outdoor Broad Use Insecticide
Potassium salts	Biorational	Safer's Insecticidal Soap
Pyrethrins	Botanical	Bonide Yard & Garden Insect Killer; Spectracide Rose & Flower Insect Spray

For more information, contact your local Extension agent for additional information or <http://rec.ifas.ufl.edu/mannion/>

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RUGOSE SPIRALING WHITEFLY

also known as Gumbo Limbo Spiraling Whitefly

a New Whitefly in South Florida

A Guide for Homeowners

This new whitefly is a large, slow moving insect capable of infesting a wide range of landscape plants such as:

- gumbo limbo
- banana
- black olive
- mango
- palms
- some shrubs such as copperleaf, cocoplum, wax myrtle, and other plants



Adults on the underside of a palm leaflet.

But DON'T panic. This whitefly is different from the ficus whitefly. So far, the Rugose Spiraling Whitefly is not causing severe plant damage such as plant death or severe branch die-back.



Eggs are laid in spirals.

What to look for: white spirals and a build-up of a white, waxy substance on the underside of leaves. This coats the eggs and immature whiteflies. If populations build-up greatly, infested plants can become covered with the white, waxy substance. This can sometimes become weakened and also be disfigured by the black sooty mold that grows on the insect's excrement (referred to as honeydew). The sticky honeydew can accumulate on cars, pool decks and patio furniture from infested trees overhead. Honeydew does not damage paint. Once the insect is under control, the sooty mold and honeydew will disappear.

Management: as soon as you see the white spirals, you need to do one of the following:

Small plants - thoroughly wash plants off with a strong stream of water. Follow-up with insecticidal soap or horticultural oil sprayed once a week for 3-4 weeks. Repeat as needed.

ALWAYS FOLLOW LABEL DIRECTIONS. The Label is the Law.

Larger plants and ornamental trees; heavily infested ornamental plants - thoroughly wash plants off with a strong stream of water. *You may want to consider using a systemic insecticide (labeled for whitefly control in landscapes) that can be applied to the soil as a drench, as a granule, or as a tablet. Systemics may take several weeks to be effective for large trees but are VERY long lasting (9 - 12 months).

A list of insecticides is on the other side of this page.

ALWAYS FOLLOW LABEL DIRECTIONS. The Label is the Law.

*Tip: If you have many heavily infested plants, you can purchase professional strength, non-restricted use insecticides. This may be more cost effective compared to the homeowner version of systemic insecticides. Or hire a professional landscape pest control company with experience controlling whiteflies in the landscape.



Underside of an infested palm frond.

Fruit trees – call your County Extension office for recommendations since most pesticides are not labeled for tropical fruit trees. See management suggestions for small plants listed above. Whiteflies can be wiped off banana leaves with a cloth.

The tables below list insecticides labeled for homeowner use against whiteflies (plants and trees **EXCEPT fruit trees**). These are available at garden centers, retail nurseries, and hardware stores.

Contact (sprayed directly onto the pest. These are least-toxic, less harmful to natural enemies of pests and to the environment.)

Trade Name(s)	Active Ingredient	Chemical Class
BioNeem (Bonide); Neem Oil (Green Light, Southern Ag); Rose Defense (Green Light)	Neem oil	Botanical
Organocide; Ultra-fine Horticultural Oil (Sunspray and others)	Paraffinic oil, vegetable oil	Biorational
Insecticidal Soap (various brands)	Potassium salts	Biorational

Systemics (usually applied to the base of the plant as a soil drench and very long lasting. Less harmful to natural enemies of pests.)

Trade Name(s)	Active Ingredient	Chemical Class
Tree & Shrub Insect Control with Safari (Green Light)	Dinotefuran	Neonicotino d
Tree & Shrub Insect Control (Bayer Advanced, Ortho Max); Tree & Shrub Protect and Feed (Bayer Advanced); and other products	imidacloprid	Neonicotino d

Others (some may harm natural enemies of whiteflies.)

Trade Name(s)	Active Ingredient	Chemical Class
Flower, Fruit & Vegetable Insect Killer (Ortho)	Acetamiprid	Neonicotinoid
Bug-B-Gon Max Lawn & Garden Insect Killer (Ortho)	Bifenthrin	Pyrethroid
Rose & Flower Insect Killer (Bayer Advanced); Lawn & Garden Insect Killer (Schultz)	Cyfluthrin	Pyrethroid
Triazicide Once & Done Insect Killer (Spectracide), liquid	Lambda-cyhalothrin	Pyrethroid
Malathion (various brands)	Malathion	Organophosphate
Indoor/Outdoor Broad Use Insecticide (Hi-Yield)	Permethrin	Pyrethroid
Yard & Garden Insect Killer (Bonide); Rose & Flower Insect Spray (Spectracide)	Pyrethrins	Botanical

For more information

Visit our website at <http://monroe.ifas.ufl.edu> and click on the "Rugose Spirling Whitefly" link or contact the UF/IFAS/Monroe County Extension office at (305) 292-4501.



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Reviewed by T. Okrzyk, UF/IFAS Miami-Dade County Extension Director, Nov. 2010.
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and astonish the rest."
— Mark Twain*