

PLANT PESTS OF REGULATORY SIGNIFICANCE

Thrips

In Central Florida

**CEU Day
MREC
June 14, 2006**

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Something New?

ALERT

- **Extension (Specialists, County Agents, Master Gardener Coordinators)**
- **Impacted trade commodities**
 - Ornamentals
 - Vegetables
 - Fruit
 - Landscape and/or Pest Management Companies
- **At risk growers**
 - Poinsettia
 - Rose
 - Vegetable transplants

**TRADE AND POLITICAL
IMPLICATIONS**

NEW THRIPS

18 in 15 years

Thrips species	Year	Origin	County detected
<i>Bolacothrips striatopennatus</i> (Schmutz)	1987	Asia	Hendry
<i>Dendrothripoides innoxius</i> (Karny)	1988	Asia	Palm Beach
<i>Organothrips indicus</i> Bhatti	1988	Asia	Hendry
<i>Thrips palmi</i>	1990	Asia	Dade
<i>Scirtothrips dorsalis</i> Hood	1991	Asia	Okeechobee
<i>Danothrips trifasciatus</i> Sakimura	1992	Asia	Hendry
<i>Neohydatothrips portoricensis</i> (Morgan)	1992	Neotropical	Dade
<i>Baileyothrips limbatus</i> (Hood)	1993	Pacific	Palm Beach
<i>Chaetanaphothrips leeuweni</i> (Karny)	1993	Asia	Dade
<i>Psydrothrips luteolus</i> Nakahara & Tsuda	1993	Pacific	Orange
<i>Retithrips syriacus</i> (Mayet)	1993	Africa	Broward
<i>Elixothrips brevisetis</i> (Bagnall)	1994	Asia	Broward
<i>Asprothrips seminigricornis</i> (Girault) foliage	1995	Pacific	Orange
<i>Stomatothrips angustipennis</i> Hood	1999	Neotropical	Hillsborough
<i>Dolichothrips indicus</i> (Hood)	1999	Asia	Pinellas
<i>Holopothrips</i> cf. <i>inquilinus</i> (Bournier)	2001	Neotropical	Dade
<i>Psectrothrips</i>	2002	Neotropical	Dade
<i>Androthrips ramachandrai</i> Karny	2002	Asia	Dade

Thrips

- Thrips feed on flowers, buds, terminals, bulbs, and corms.
- Damaged leaves, buds, or petals become silvery, stippled, blotched, streaked, papery, or deformed.
- Some species leave black, varnish-like specks of excrement



Cuban laurel thrips - *Gynaikothrips ficorum* (Marchal)



Ficus retusa

Gynaikothrips uzeli *Ficus benjamina*



***Gynaikothrips uzeli* –
*Ficus benjamina***



Gynaikothrips uzeli* – *Ficus benjamina



***Gynaikothrips uzeli* –
*Ficus benjamina***



Thysanoptera: Thrips

(*Holopothrips near inquilinus*)

- Found in 2001 on trumpet trees, *Tabebuia* spp.
- This insect is new to the United States
- Currently in Miami-Dade, Broward and Palm Beach Counties.
- Feeding from this new thrips causes leaf distortion. The leaves fold and curl and appear to be covered in galls

UF-Glenn



UF-Glenn



Status of *Scirtothrips* *dorsalis*, Chilli thrips

Chilli Thrips – Cross Commodity Task Force

- Cross Commodity Task Force established to address issues surrounding introduction of Chilli thrips (Facilitated by USDA-APHIS).
- Three sub-groups:
 - Industry (ornamentals, cotton, vegetables)
 - Regulatory (states, APHIS)
 - Scientists (Technical Advisory Group)

Division of Plant Industry

Regulatory Response

- *Scirtothrips dorsalis*: was detected on October 14, 2005. *Scirtothrips dorsalis* has been known to occur in Hawaii since 1987, and there were previous detections in Florida in 1991 and 1994, however FDACS has had no detections in the intervening years.
- It was detected at a residential property located in Palm Beach county, Florida.
- The host was *Rosa* sp.

Division of Plant Industry Regulatory Response

- *Scirtothrips dorsalis* is considered a serious plant pest of quarantine significance.
- When detected in retail garden centers or commercial nurseries, all infested nursery stock will be quarantined until the pest has been eliminated.
- Quarantine treatments will involve applying University of **Florida/IFAS pesticide recommendations** for controlling Chilli trips on ornamentals.

How do we develop pesticide recommendations for a pest we have never encountered before?

Division of Plant Industry Regulatory Response

Detections in Florida as of December 7, 2005

- Number of Counties: 16 (from Monroe to Alachua county)
- Number of Retail Garden Centers 62
- Number of Nurseries 1
- Number of Residential Properties 2
- Host Plant genus: Rosa sp – 54; Capsicum sp – 10; Illicium sp - 1

Detections in Texas Retail Centers on Capsicum from a Southern State other than Florida.

OLD

S. dorsalis

Synonyms: Chilli, Castor, Berry, Assam and Yellow Tea Thrips

Host Plants:

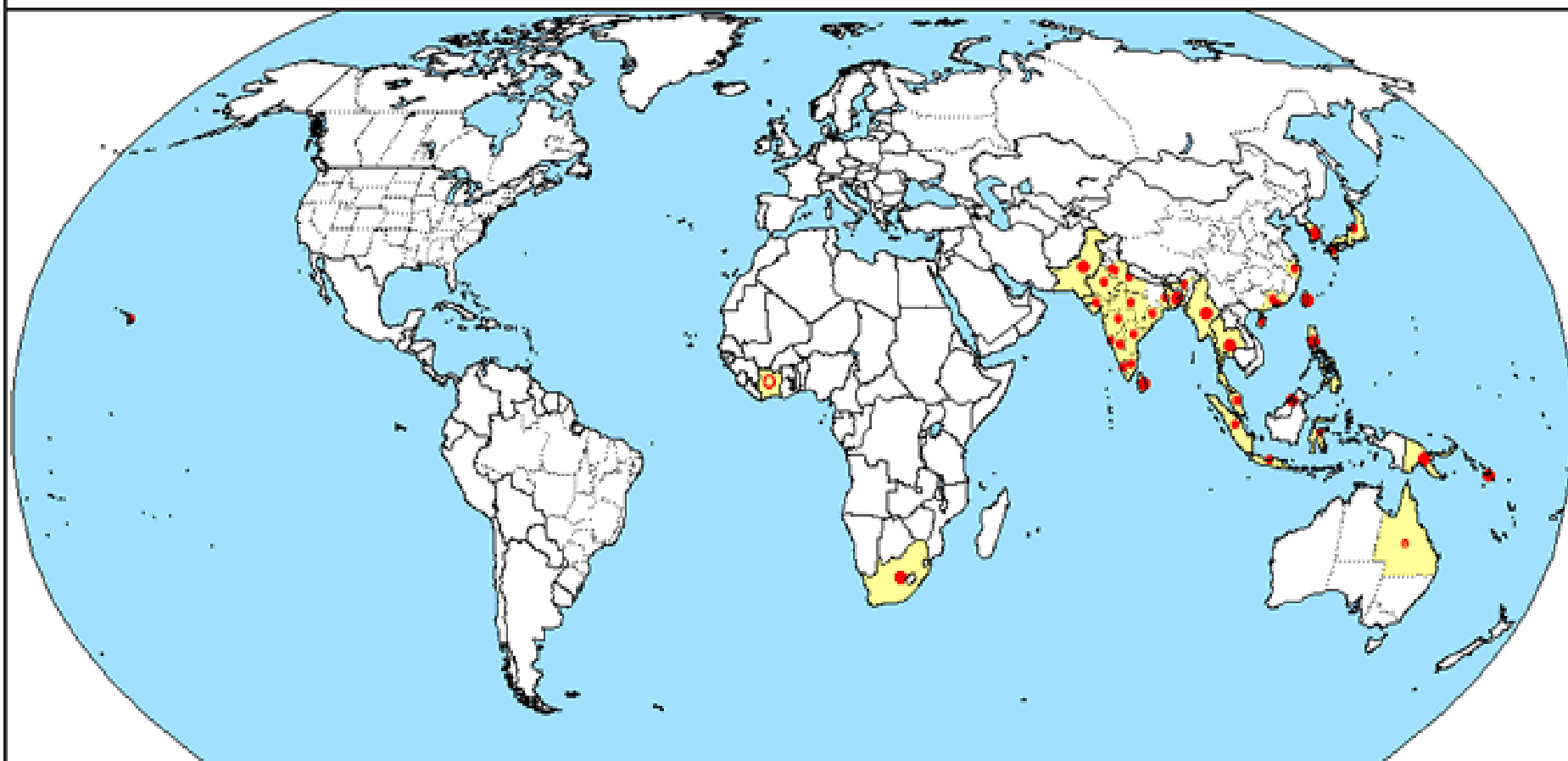
Over 112 host plants including banana, beans, chrysanthemum, citrus, corn, cotton, cocoa, eggplant, ficus, grape, grasses, holly, jasmine, kiwi, litchi, longan, mango, onion, peach, peanut, pepper, rose, soybean, strawberry, tea, tobacco, tomato, viburnum, etc.

ECONOMIC IMPORTANCE

Major pest of:

- **strawberries** in Queensland, Australia
- **tea** in Japan and Taiwan
- **citrus** in Japan and Taiwan (Chiu *et al.* 1991, Tatara and Furuhashi 1992, Tschuchiya *et al* 1995)
- **cotton** in the Ivory Coast (Bournier 1999)
- **soybeans** in Indonesia (Miyazaki *et al.* 1984)
- **chillies** and **castor bean** in India
- **peanuts** in several states in India (Mound and Palmer 1981).
- Ananthakrishnan (1984) also reports damage to the following hosts: **cashew, tea, chillies, cotton, tomato, mango, castor bean, tamarind, and grape.**
- **Rose** in India

Scirtothrips dorsalis



National record



Subnational record



Present

Present only in some areas

EPPO 2003-06

Old World Distribution:

Japan, China, India, Pakistan, Taiwan, Korea, Thailand, Africa, and Australia

Survey of St. Lucia and St. Vincent

- Since 1984, USDA-APHIS inspectors at various ports of entry have reported *S. dorsalis* 89 times on imported plant materials belonging to 48 taxa (USDA 2003). Most commonly the pest was associated with cut flowers, fruits and vegetables.
- In 2003, *S. dorsalis* was found in shipments of peppers from St. Vincent and St. Lucia inspected in Miami. First time from the Western Hemisphere.
- Dr. Tom Skarlinsky (2003) found *S. dorsalis* on pepper crops at multiple farm sites in St. Vincent.

Chilli Thrips



Orchid thrips - *Chaetanaphothrips orchidii* (Moulton)



Chilli Thrips Larva



Photo by Dak Seal, UF/IFAS

DRS. UFL-IFAS

Chilli Thrips Adult on Rose



Photo by Dak Seal, UF/IFAS

DRS, UFL-IFAS

Chilli thrips immatures on a rose leaf.



Chilli thrips immatures on a rose leaf.

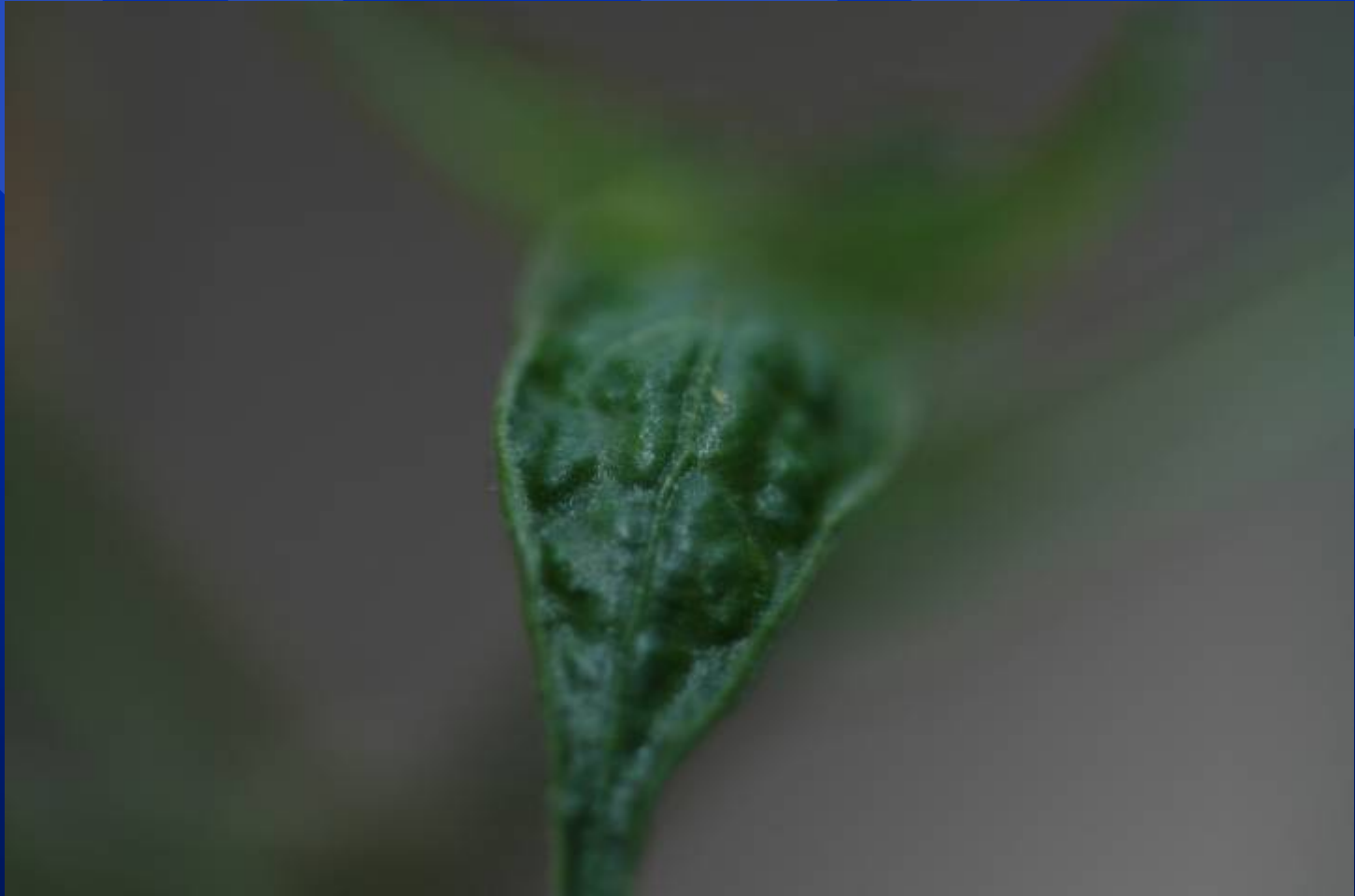


Chilli Thrips Damage

[Thrips Video](#)

[Damage Video](#)

Chilli Thrips-pepper



Chilli Thrips-pepper



Slight Leaf Curl on Hot Peppers (*Capsicum chinense* var West Indies Red) St. Vincent, West Indies



Low population density, less than 1 adult per 6-8 leaves

Significant Stunting & Leaf Curl West Indies Red Hot Pepper, St. Vincent



M. Ciomperlik
USDA APHIS PPQ

High population density, greater than 10 individuals per terminal

Pepper Scarring Symptoms: 2004 - Negeve, Israel Sweet pepper (*Capsicum annuum*)



P. Weintraub, Gilat Research Center, Israel

Chilli Thrips



Chilli Thrips- rose



Chilli Thrips-rose



Chilli Thrips-rose



Chilli Thrips-rose



Chilli Thrips-rose



Chilli Thrips-strawberry



Chilli Thrips-strawberry



Chilli Thrips-cucumber



Chilli Thrips-impatiens



Chilli Thrips - *lisanthus*



Chilli Thrips - *lisanthus*



Chilli Thrips - *Antirrhinum majus* (snapdragon)



A close-up photograph of a green snapdragon plant. The leaves are vibrant green, elongated, and have a slightly waxy texture. In the center, a small, green, unopened flower bud is visible, showing the characteristic shape of a snapdragon flower. The background is dark and out of focus.

Chilli Thrips - *Antirrhinum majus*
(snapdragon)

Chilli Thrips - zinnia



Ligustrum



Ligustrum



Ligustrum



Indian Hawthorne



Indian Hawthorne



Indian Hawthorne



Pittosporum



Pittosporum



Pittosporum





IVY



IVY



IVY



IVY



DISEASE TRANSMISSION

S. dorsalis is a vector of some tospoviruses:

- Possibly Tomato Spotted Wilt..?
- Peanut Bud Necrosis Virus (PBNV)
- Peanut Yellow Spot Virus (PYSV).
- Peanut Chlorotic Fan-spot Virus (PVFV).
- Bacterial Leaf Spot and Bunchy Top diseases are also vectored by *S. dorsalis*.
- It often causes chilli leaf curl (CLC) due to heavy larval feeding.

Is *Scirtothrips dorsalis* a Serious Economic Pest for the US?

Preliminary Economic Analysis:

**Lynn Garrett (Agricultural Economist, USDA APHIS
PPQ CPHST)**

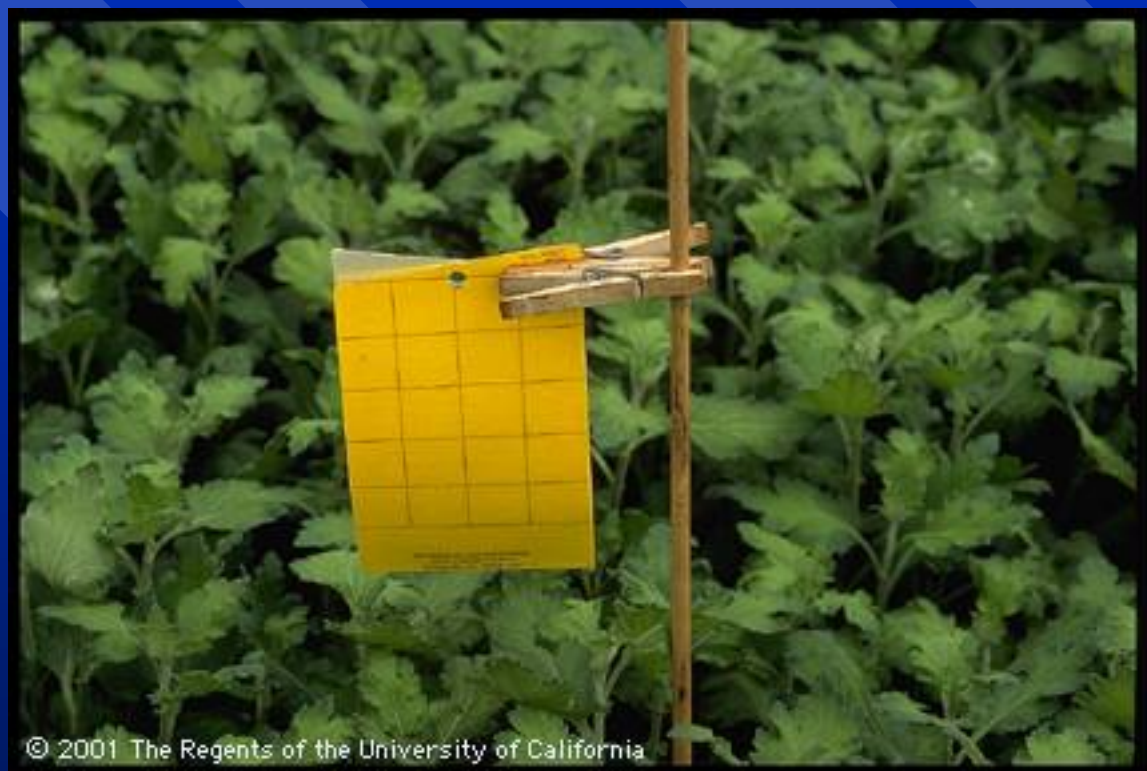
**28 host crops (10 primary + 18 secondary)
(tomatoes, beans, peppers, grapes, cotton, citrus,
etc.)**

Is *Scirtothrips dorsalis* a Serious Economic Pest for the US?

- Assuming an overall U.S. crop yield loss from Chilli Thrips of 5 percent the total crop value loss would equal \$3.0 billion (primary hosts \$583 million and secondary hosts \$2.43 billion).
- Assuming an overall U.S. crop yield loss from Chilli Thrips of 10 percent the total crop value loss would equal \$5.98 billion (primary hosts \$1.2 billion and secondary hosts \$4.78 billion).

The image features a dark blue background with several diagonal stripes of a lighter blue shade running from the top-left towards the bottom-right. Centered on this background is the word "Scouting!" in a large, bold, orange-yellow font. The letters have a slight 3D effect with a dark shadow on the right side.

Scouting!



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Sample Submission



FDACS-DPI

Sampling Rose Buds for Thrips



FDACS-DPI

Cut the rose bud



FDACS-DPI

Open the rose bud



Check for symptoms



FDACS-DPI

Bring with you:

- One plastic 250 ml bottle
- Isopropyl Alcohol 70%
- Glass Vials

Place the bud in the bottle with Isopropyl alcohol



FDACS-DPI

Shake it vigorously



FDACS-DPI

Decant in a glass vial

FDACS-DPI



Examine for thrips

UF/IFAS Insect ID Lab

- Mr. Lyle Buss
Bldg. 970
PO BOX 110620 IFAS
University of Florida
Gainesville, FL 32611-0620
(352) 392-1901 ext. 190
FAX (352) 392-5660
E-Mail: ufinsectid@ifas.ufl.edu
- More information on sample submission
at: <http://edis.ifas.ufl.edu/SR010>

FDACS-DPI

- Dr. G.B. Edwards

Florida Dept. of Agriculture, DPI

1911 SW 34th Street

PO Box 147100

Gainesville, FL 32614

(352) 372-3505 ext. 194

edwardg@doacs.state.fl.us

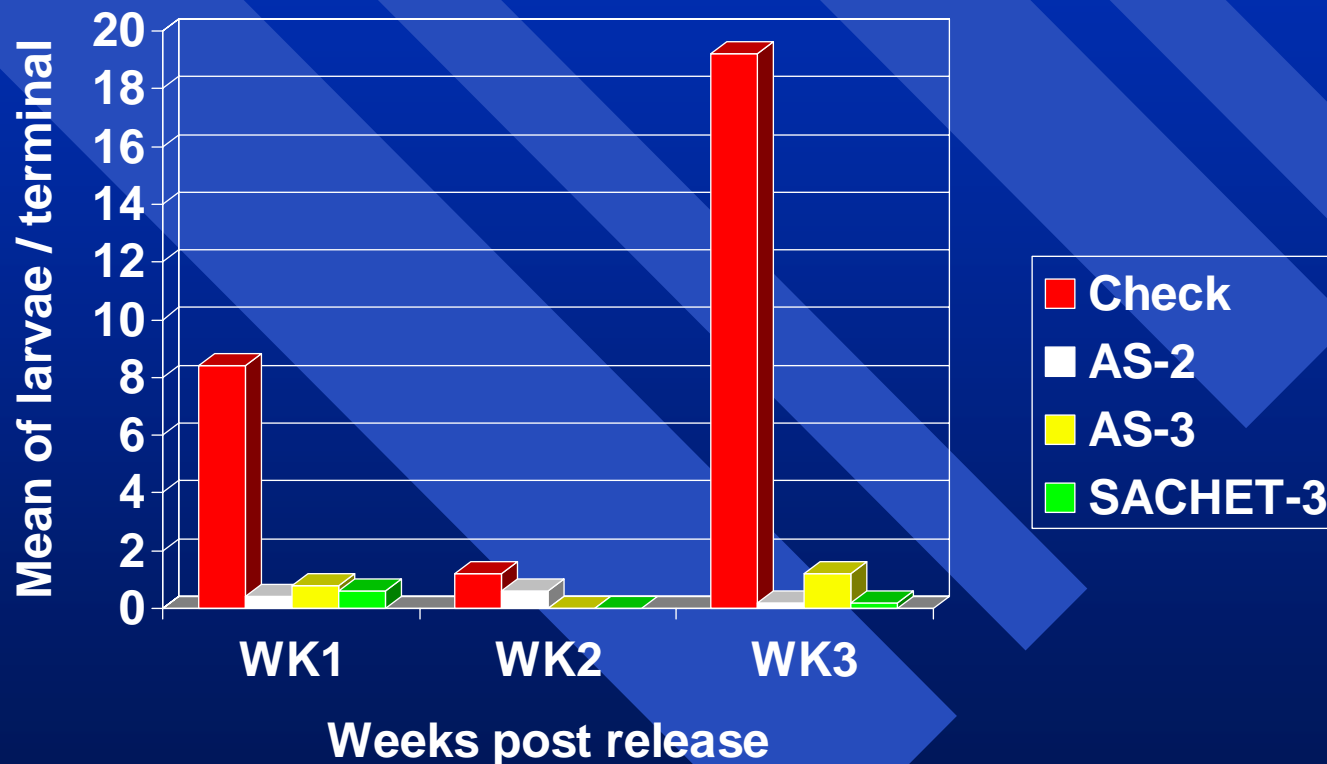
Regulatory Implications

- Currently, *S. dorsalis* is a regulated pest.
- Official species-level confirmation must be made by FDACS-DPI or the USDA in Florida.
- If *S. dorsalis* is detected in a nursery:
 - An immediate quarantine is implemented.
 - The nursery may either destroy plant material or consider chemical treatment options.
 - CAPS program currently evaluating extent of infestation in Florida environment.

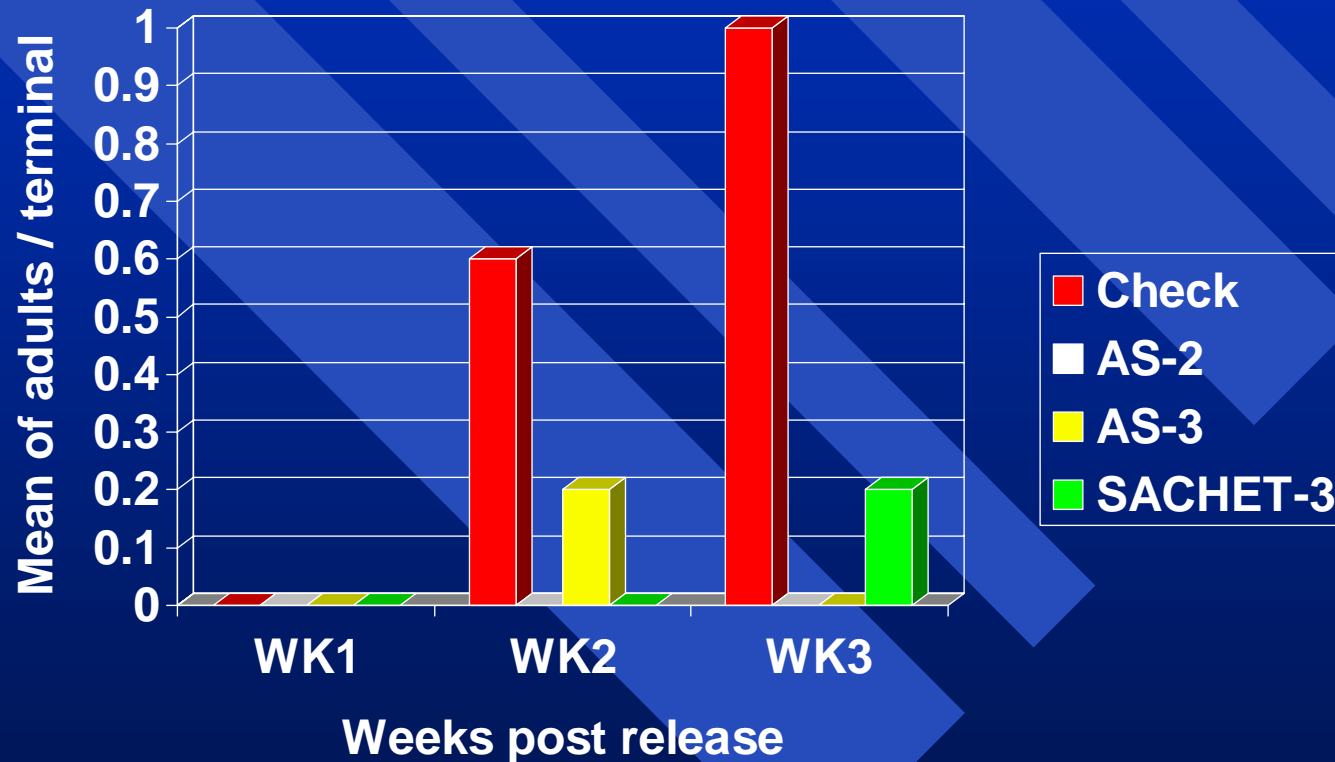
Ornamentals

- abamectin (Avid)
- acephate (such as Orthene or Orthonex)
- acetamiprid (TriStar)
- azadirachtin (such as Azatin, Neem oil) (not labeled for thrips)
- chlorfenapyr (Pylon) (not labeled for thrips or for use outside of greenhouses)
- cyfluthrin (Decathlon, Discus, Bayer Advanced products such as Tree and Shrub Insect Control or Rose and Flower Insect Killer)
- dinotefuran (Safari)
- disulfoton (such as Di-Syston Systemic Insecticide Granules)
- imidacloprid (Marathon, Merit, Discus and the Bayer products listed above)
- novaluron (Pedestal)
- spinosad (such as Conserve)

Control of Chilli Thrips with *Amblyseius swirskii*



Control of Chilli Thrips with *Amblyseius swirskii*



MREC.IFAS.UFL.EDU/LSO

Or search GOOGLE
IPM Foliage Plants

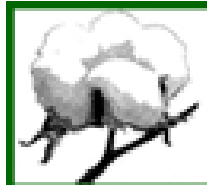


**"Mr. Osborne, may I be excused?
My brain is full."**



UNIVERSITY OF
FLORIDA

IFAS EXTENSION



SPDN

Southern Plant Diagnostic Network

IPM

Integrated Pest Management

Florida



Fresh
Florida

Division of

PLANT INDUSTRY

Protection through Detection

Florida Department of Agriculture & Consumer Services

APHIS



USDA

EDUCATION

CSREES

RESEARCH • EXTENSION



Thank you!