## NEW THRIPSES

17 in 15 years

<table>
<thead>
<tr>
<th>Thrips species</th>
<th>Year</th>
<th>Origin</th>
<th>County detected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolacothrips striatopennatus (Schmutz)</td>
<td>1987</td>
<td>Asia</td>
<td>Hendry</td>
</tr>
<tr>
<td>Dendrothripoides innoxius (Karny)</td>
<td>1988</td>
<td>Asia</td>
<td>Palm Beach</td>
</tr>
<tr>
<td>Organothrips indicus Bhatti</td>
<td>1988</td>
<td>Asia</td>
<td>Hendry</td>
</tr>
<tr>
<td>Scirtothrips dorsalis Hood</td>
<td>1991</td>
<td>Asia</td>
<td>Okeechobee</td>
</tr>
<tr>
<td>Danothrips trifasciatus Sakimura</td>
<td>1992</td>
<td>Asia</td>
<td>Hendry</td>
</tr>
<tr>
<td>Neohydatothrips portoricensis (Morgan)</td>
<td>1992</td>
<td>Neotropical</td>
<td>Dade</td>
</tr>
<tr>
<td>Baileyothrips limbatus (Hood)</td>
<td>1993</td>
<td>Pacific</td>
<td>Palm Beach</td>
</tr>
<tr>
<td>Chaetanaphothrips leeuweni (Karny)</td>
<td>1993</td>
<td>Asia</td>
<td>Dade</td>
</tr>
<tr>
<td>Psydrothrips luteolus Nakahara &amp; Tsuda</td>
<td>1993</td>
<td>Pacific</td>
<td>Orange</td>
</tr>
<tr>
<td>Retithrips syriacus (Mayet)</td>
<td>1993</td>
<td>Africa</td>
<td>Broward</td>
</tr>
<tr>
<td>Elixothrips brevisetis (Bagnall)</td>
<td>1994</td>
<td>Asia</td>
<td>Broward</td>
</tr>
<tr>
<td>Asprothrips seminigricornis (Girault) foliage</td>
<td>1995</td>
<td>Pacific</td>
<td>Orange</td>
</tr>
<tr>
<td>Stomatothrips angustipennis Hood</td>
<td>1999</td>
<td>Neotropical</td>
<td>Hillsborough</td>
</tr>
<tr>
<td>Dolichothrips indicus (Hood)</td>
<td>1999</td>
<td>Asia</td>
<td>Pinellas</td>
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<tr>
<td>Holothrips cf. inquilineus (Bournier)</td>
<td>2001</td>
<td>Neotropical</td>
<td>Dade</td>
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<td>Psectrothrips</td>
<td>2002</td>
<td>Neotropical</td>
<td>Dade</td>
</tr>
<tr>
<td>Androthrips ramachandrai Karny</td>
<td>2002</td>
<td>Asia</td>
<td>Dade</td>
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</tbody>
</table>
Status of *Scirtothrips dorsalis*, Chilli thrips
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 thrips on ornamentals.
Division of Plant Industry
Regulatory Response

Detections in Florida as of October, 2006

- Number of Counties: 24 (from Monroe to Alachua county)
- Number of Retail Garden Centers: 90
- Number of Nurseries: 11
- Number of Residential Properties: 54
- Detected on Multiple Host Plants

Detections in Texas Retail Centers on Capsicum from a Southern State other than Florida.
**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.
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).
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)
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 Furuhushi 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
Damage
Chilli Thrips Larva

Photo by Dak Seal, UF/IFAS
Chilli Thrips Adult on Rose

Photo by Dak Seal, UF/IFAS
Chilli Thrips
Chilli Thrips
Chilli Thrips
Chilli Thrips
Chilli Thrips - rose
Chilli Thrips - rose
Chilli Thrips-rose
Chilli Thrips-rose
Chilli Thrips-rose
Ligustrum
Pittosporum
Chilli Thrips-pepper
Chilli Thrips - pepper
Chilli Thrips - impatiens
Chilli Thrips - lisianthus
Chilli Thrips - lisanthus
Chilli Thrips - lisianthus
Chilli Thrips-impatiens
Chilli Thrips - lisianthus
Chilli Thrips - *Antirrhinum majus* (snapdragon)
Chilli Thrips - zinnia
IVY
Scouting
Western flower thrips trapped on a yellow sticky card
Tapping western flower thrips onto white paper
Management

Cultural
Management
Chemical
Monitoring and when to treat
Chemical

- abamectin
- acephate
- azadirachtin
- chlorfenapyr
- chlorpyrifos
- cyfluthrin
- diazinon
- dinotefuran
- fluvalinate
- lambda-cyhalothrin
- imidacloprid
- methiocarb
- novaluron
- oils
- pyridaben
- soaps
- spinosad
Management

Biological
Why Biological Control?

- To fulfill the requirements of an Organic Herb Production Grant.
- Chilli Thrips was attacking the basil, mint, and hot peppers.
- Chemicals caused significant phytotoxicity and impacted the other biological controls.
Materials and Methods:

Chilly Chili Pepper

Amblyseius swirskii

(© Bert Mans)

davesgarden.com
A sachet contains bran, *Carpoglyphus lactis* (Dried Fruit Mite or Sugar Mite) and the predatory mite *A. swirskii*. 
Material and Methods:

- Chilly Chili peppers were grown from seeds. When plants reached a height of 10-15 cm, they were transplanted into Vergro amended soil and allowed to acclimate in a greenhouse for 3 days prior to being placed in a study.

- Each study consisted of isolating individual plants on trays in water moats to reduce the potential for predatory mites moving between treatments.
Material and Methods:

- This study consisted of isolating five plants on each isolation unit. Eight isolation units were established, four for each treatment.

- Two treatments were established:
  - Control: no predatory mites
  - One Sachet per 5 plants for the duration of the study. The sachet was placed on one plant in the group of 5.
Material and Methods:

Three new leaves and 3 old leaves were marked on each plant. On days 7, 14 and 21 after treatment the number of immature and adult thrips was counted using a dissecting microscope.
Study 1

Control of Chilli Thrips
Chilly Chili Pepper

Mean # of Adults/Plant

ck old
ck new
A.s. old
A.s. new

N=20
5 plants/Unit
4 Units/treatment

day 7
day 14
day 21
Study 1

Control of Chilli Thrips
Chilly Chili Pepper

Mean # of Immatures/Plant

ck old
ck new
A.s. old
A.s. new

N=20
5 plants/Unit
4 Units/treatment
Material and Methods:

- Twenty isolation units, with one plant per unit, were established on a raised bench within an infested greenhouse.
- Four treatments were established:
  - Control: no predatory mites
  - 2 A.S.: Two adult female predators were added to each plant weekly
  - 3 A.S.: Three predators per plant weekly
  - Sachet: One sachet was added to each plant for 72 h
Material and Methods:

Three leaves were marked on each plant. On days 8, 15 and 25 after treatment the number of immature thrips, adult thrips and *A. swirskii* was counted using a dissecting microscope.
Study 2

Control of Chilli Thrips
Chilly Chili Pepper

Mean # Adults/Plant

day 8  day 15  day 25

ck  A.s. 2  A.s. 3  A.s. sachet
Study 2

Control of Chilli Thrips
Chilly Chili Pepper

Mean # of Immature Thrips/Plant

<table>
<thead>
<tr>
<th></th>
<th>day 8</th>
<th>day 15</th>
<th>day 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>ck</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.s. 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.s. 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.s. sachet</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- ck
- A.s. 2
- A.s. 3
- A.s. sachet
Study 2

Control of Chilli Thrips
Chilly Chili Pepper

Mean # Nymphs/Plant

- A.s. 2
- A.s. 3
- A.s. sachet

Day 8
Day 15
Day 25

Amblyseius swirskii
Study 2

Control of Chilli Thrips
Chilly Chili Pepper

Mean # Adults/Plant

- A.s. 2
- A.s. 3
- A.s. sachet

Amblyseius swirskii
Study 2

Control of Chilli Thrips
Chilly Chili Pepper

<table>
<thead>
<tr>
<th></th>
<th>day 8</th>
<th>day 15</th>
<th>day 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.s. 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.s. 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.s. sachet</td>
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</tbody>
</table>

Mean # Eggs/Plant

Amblyseius swirskii
The use of this particular predatory mite shows significant promise as a preventative treatment for this thrips pest.

This predatory mite has shown a similar ability to control whiteflies (Bemisia tabaci) and broad mite (Polyphagotarsonemus latus). Both of these pests are significant pests of many ornamental plants that are attacked by Chilli thrips.
The End