Sustainable Roses: Chilli Thrips Research...part 4

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• Identification/damage/scouting
• Cultural control
  – Cultivar preferences
  – Relationship with fertilizers
  – Pruning
• Biological control agents
• Insecticides
• Conclusions

Identification
Chilli thrips 101

- Adults pale brown, 1/20th" with dark 'wing line'; significantly smaller than flower thrips
- Larvae pale yellow, no wings
- Mostly found on young foliage; pupal stages may occur in soil
- No noticeable 'hairs' at tip of abdomen
Flower thrips (L) have hairs at the end of their body, chilli thrips (R) do not.
Distribution


Chilli Thrips Status in U.S.A.

Established by survey in 17 counties

Source: Cooperative Agricultural Pest Survey
How are chilli thrips distributed?

Projected range

Damage Symptoms
Chilli thrips are foliar feeders

Fresh damage to KO rose

Chilli thrips damage (L) versus insecticide treated (R)

Symptoms on KO rose...
Damage to Hydrangea 'Mme Emile Mouillere' in NY

Chilli thrips is a pest of fruits and vegetables

Photo courtesy of Dan Gilpin

Photo: Luis Aristizabal
Scouting

Location of chilli thrips on new growth (from top to bottom)

Number of chilli thrips on terminals, buds, flowers, and visual damage

Source: Aristobol (unpublished)
Correlation of visual damage (Severity index) and chilli thrips population on KO rose (containers)

Scouting with a beat tray

Examining life stages
Cultural Controls

Cultivar selection

Table 2. Mean values of the damage severity index (DSI) caused by chill ships in 3 cultivars (old garden (OG), modern (MR), and modern (MR), grown in central Florida from Sept. 2008 to Dec. 2009.

<table>
<thead>
<tr>
<th>Cultivar*</th>
<th>Group</th>
<th>Chill-drip damage (DSI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abu B.K. Best</td>
<td>OG</td>
<td>1.41 c</td>
</tr>
<tr>
<td>Old Black</td>
<td>OG</td>
<td>1.24 b</td>
</tr>
<tr>
<td>“Skidmore Best”</td>
<td>OG</td>
<td>1.26 b</td>
</tr>
<tr>
<td>Redefina’s Dream</td>
<td>MG</td>
<td>1.09 b</td>
</tr>
<tr>
<td>Floricherry “Double Knock Out”</td>
<td>MG</td>
<td>1.10 b</td>
</tr>
<tr>
<td>Polar PC (Or)</td>
<td>MG</td>
<td>1.41 b</td>
</tr>
<tr>
<td>Wilshah (Stone)</td>
<td>MG</td>
<td>1.78 d</td>
</tr>
<tr>
<td>Spicy</td>
<td>OGE</td>
<td>1.85 d</td>
</tr>
<tr>
<td>Duchesse de Brabant</td>
<td>OGE</td>
<td>2.14 c</td>
</tr>
<tr>
<td>Mordula</td>
<td>OGE</td>
<td>3.00 f</td>
</tr>
</tbody>
</table>

*Craft name as presented on package.

**Cultivars followed by the same letter are not significantly different (P ≤ 0.05) according to Tukey’s test.


Varieties being tested at MREC (2015), after Orwat
Can pruning manage chilli thrips?

Fig. 5. Effect of pruning alone and in combination with birolational insecticides as a method to manage chilli thrips on rose plants under nursery conditions. Arrows represent the week when products were applied. (A) before pruning, (B, C, and D) at 0, 1 and 2 weeks after pruning, respectively.

Natural Enemies
Key natural enemies

- Pirate bugs (*Orius* spp)
- Predatory mites – (*Amblyseius* spp)
- Lacewings
- Predatory thrips
- Ladybirds
- Diseases - fungi

Do Native Natural Enemies Control Thrips on landscape plants?

- Three plants (plumbago, Indian hawthorn, and KnockOut rose)
- Replicated 4 times at 2 sites (6 plants/rep.)
- Weekly census – 2 years

Results (2008/9)

- Indian hawthorn, and plumbago had consistently < 1 thrips per sample (aesthetic quality good)
- KO Rose consistently 1-2 thrips per sample (visual quality impacted)
“Natural enemies are insufficient to prevent aesthetic damage from thrips on KnockOut® roses in central Florida landscapes”

Can we release commercially reared natural enemies to control chilli thrips?

Releases of *A. swirskii* and *O. insidiosus* successfully managed chilli thrips on bell pepper

Predator mites did not establish on KnockOuts in landscape tests

Problem: lack of domatia, extra floral nectaries and leaf trichomes?

Insecticides

Insecticides for chilli thrips on ornamentals*

<table>
<thead>
<tr>
<th>Material</th>
<th>Trade</th>
<th>Use site</th>
<th>IRAC class</th>
<th>Pred. mites</th>
<th>Orius</th>
<th>Lacewing</th>
<th>Ladybeetle</th>
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<tbody>
<tr>
<td>Acephate</td>
<td>Orthene</td>
<td>L,N,G</td>
<td>1B</td>
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<tr>
<td>Acetamiprid</td>
<td>TriStar</td>
<td>L,N,G</td>
<td>4A</td>
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<tr>
<td>Dinotefuran</td>
<td>Safari</td>
<td>L,N,G</td>
<td>4A</td>
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<tr>
<td>Imidacloprid</td>
<td>Marathion, Merit</td>
<td>L,N,G</td>
<td>4A</td>
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<tr>
<td>Thiamethoxam</td>
<td>Flagship</td>
<td>L,N,G</td>
<td>4A</td>
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<tr>
<td>Pyridalyl</td>
<td>Overture</td>
<td>G</td>
<td>UN</td>
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<tr>
<td>Chlorfenapyr</td>
<td>Pylon</td>
<td>G</td>
<td>13</td>
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<tr>
<td>Spinosad</td>
<td>Conserve</td>
<td>L,N,G</td>
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<tr>
<td>Fenchlormid</td>
<td>Azia</td>
<td>L,N,G</td>
<td>5k</td>
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<tr>
<td>Amanectin</td>
<td>Asid</td>
<td>L,N,G</td>
<td>6</td>
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</tbody>
</table>

*Based on data from: Ciomperlik, Ludwig, Osborne, Seal, Arthurs
• Combination insecticide containing spinetoram (group 5) and sulfoxaflor (group 4c)
• Registration for T&O market in 2015
• Provided significant control of chilli thrips for > 9 weeks in our tests with KO roses!

Biological insecticides and horticultural oils have only provided moderate effectiveness (Aristizabal)

Insecticide strategies: production vs landscape
• Growers surveyed in FL and LA applied insecticides weekly in most cases, i.e. reflects risk
• Landscapers should adopt different aesthetic thresholds and practice more selective insecticide use along with cultural controls
Conclusions

• Cultural
  – Limit fertility
  – Prune and sanitize
  – Tea varieties may be less susceptible
• Natural enemies
  – Suppress but not totally effective on KO rose
• Insecticides
  – XXpire™ and Conserve™ are effective and preserve natural enemies
  – Pyrethroids not recommended

Resources

• General information
  http://edis.ifas.ufl.edu/in833
• Damage photos
  http://mrec.ifas.ufl.edu/lso/thripslinks.htm
• Distribution
  http://www.invasivespeciesinfo.gov/animals/chillithrips.shtml