Biology and Management of Chilli Thrips and Other Key Pests

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Chilli thrips *Scirtothrips dorsalis* distribution

Native to southeast Asia and India

- Peanuts & chilli peppers in India
- Tea in Japan & Taiwan
- Soybeans in Indonesia
- Strawberries in Australia

Introduced to the western hemisphere on imported plant products (cut-flowers)
Current Situation in US (Chilli thrips)

Florida
- 1991...first recorded in Florida (Okeechobee County)
- 1994 ... Highlands County
- 2004 & 2005 Chilli thrips Outbreaks (ornamental, roses)
- 2010 - Present in > 45 counties

Texas - LRGV
- 2008 - present on landscape roses in Harris and Montgomery counties

Puerto Rico
- 2006 detected in wholesale nurseries
Chilli thrips (Adult & Larvae)

Adults are about 1.2 mm (0.05) inches long
Symptoms of Chilli thrips infestation

Severe leaf curling in heavy infestation

Implicated in transmission of a few virus diseases

Tomato Spotted Wilt Virus (TSWV), and Yellow Spot Virus in peanuts
Symptoms of Chilli thrips infestation

- Bronzing
- Shoot Die-back
High infestation also damages the fruit
Lifecycle of Chilli thrips

- Adult: 11-15 d
- Eggs hatch: 2-7 d
- Prepupal: 24 h
- Pupal: 2-3 d
- Two larval instars: 8-10 d
Key aspects of Chilli thrips management program

- Weekly monitoring (scouting of blueberry planting)
- Implementation of insecticide program (if more than 5% of the field has obvious hot-spots and Chilli thrips injury)
- Synthetic pyrethriods can be used in a rotation program but use should be restricted because they reduce the population of natural predators
Comparison of various insecticides in southern highbush blueberries

Insecticides

Assail Delegate Novaluron GF968 Knack Calypso Untreated

Average increase in thrips population
Mean numbers of Chilli thrips larvae on Jalapeno pepper plant treated with various insecticides

- Oxadiazinonee
- Organo-phosphates
- Carbamates
- Organo-chlorines

Applied four times on the foliage at 7 d intervals
Samples were collected 48h after each application
Evaluation was made by counting adults and larvae on randomly selected 10 leaves/plot
Mean numbers of Chilli larvae/plant treated with neonicotinoid insecticides
Beneficial insects that feed on Chilli thrips

Hemipterans

Bigeyed bug \textit{Geocoris} spp.

Minute pirate bug, \textit{Orius} spp.
Beneficial insects that feed on Chilli thrips

- Phytoseid mites (predatory)
  – *Amblyseius swirskii*
Summary and findings
Insecticide management program

- **Spinosyns**
  - Delegate 3.5
  - Entrust (organic) 3.0

- **Neonicotinoids**
  - Assail (Acetamiprid) 4.0
  - Imidaclorpid (Admire) 3.5 – 4.0

- **Organophosphates**
  - Malathion 2.5 – 3.0
  - Imidan (Phosmet) 2.5 – 3.0
SWD Survey: 2012 and 2013
Blueberry Seasons

2012 had more captures than 2013 in most counties.
Movement Study 2013 Blueberry Seasons

• 11 blueberry farms

• 7 Florida counties
  – Polk in south-central to Suwannee in the north

• 4 to 7 traps per site & traps were hung on the border and in the center of the field

• Traps serviced weekly March to May
Mean SWD Captured in Perimeter and Central Traps in Blueberries 2013

SWD captures similar throughout season, greater in perimeter traps at end.

\[ P \leq 0.05 \]
Determining how alternative hosts impact SWD populations

Major plant spp: Wild blackberry
Others: wild grapes, red tip leaves (Photinia fraseria), black night shade
Developing a Rotational Spray Program for SWD

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* Compounds with long PHIs were applied before start of the harvesting period
Effect of Various pesticides on SWD Population

Entrust - Ent/Ent/Pyg/Pyg
Delegate 1 - Del/Cyaz/ Cyaz/Del
Malathion - Mal/ Del/ Hero/Hero
Delegate 2 - Del/ Imid/ Mal/Mal
Danitol - Dan/ Del/ Mal/Mal
Delegate 3 - Del / Mal / Must /Must
Control (untreated)

No SWD larva were found in the incubated berries
Summary and findings

• SWD moved into the field from adjacent areas containing host plants
  – As season progressed and less berries were available for harvesting a higher population of flies were recorded within the blueberry planting

• Wild blackberries are a major host for SWD during the off-season for blueberries

• Most of the insecticide combinations including the organic treatments suppressed SWD population
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