

# *Thrips parvispinus*: Current Pest Status and Chemical Control



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# *Thrips parvispinus*

- Also known as pepper thrips
- Native to southeast Asia
- First detection in Orange County, FL in 2020
- Regulated pest!

## PEST ALERT

FDACS-P-01926  
Pest Alert created August 2020.

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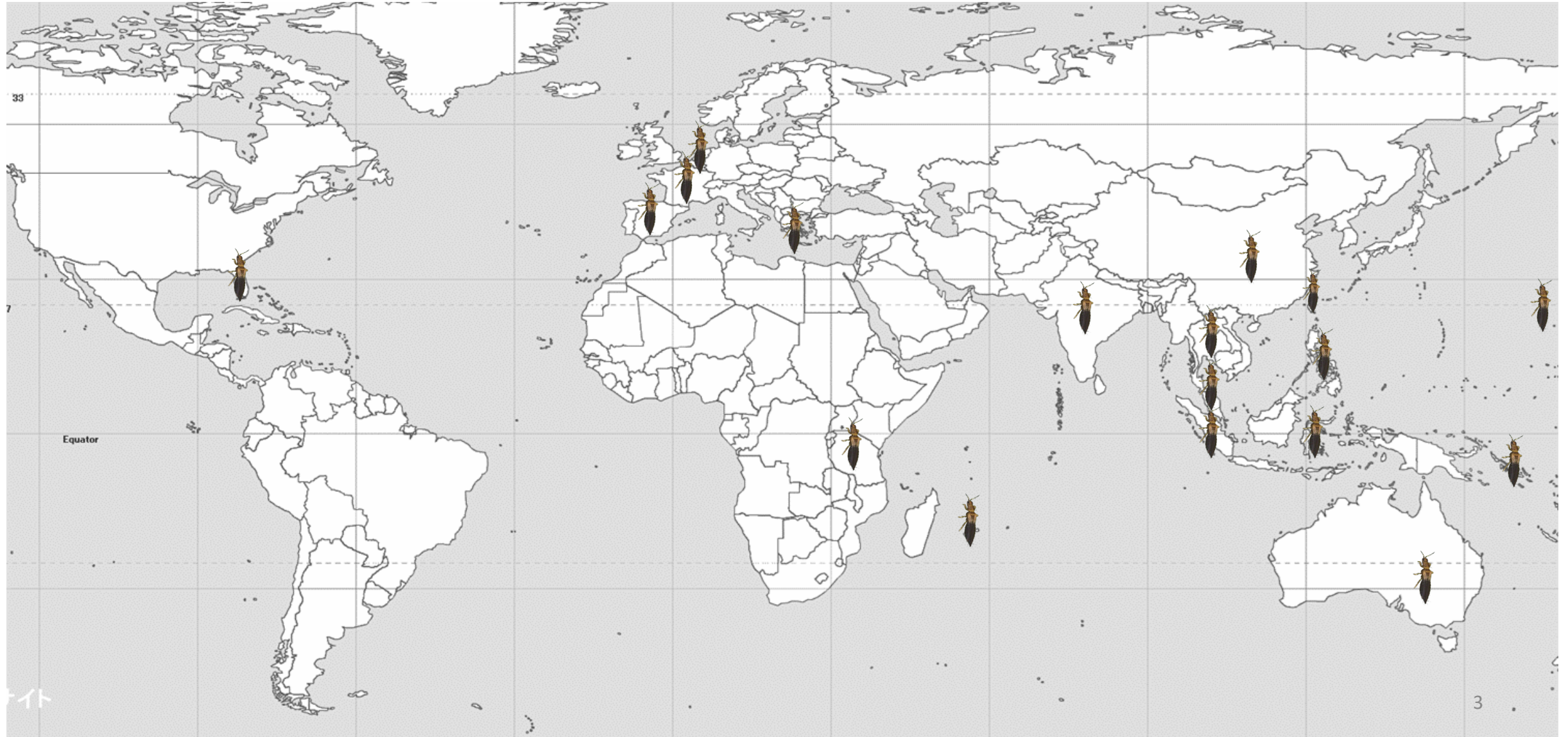
Florida Department of Agriculture and Consumer Services  
Division of Plant Industry

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*Thrips parvispinus* (Karny)

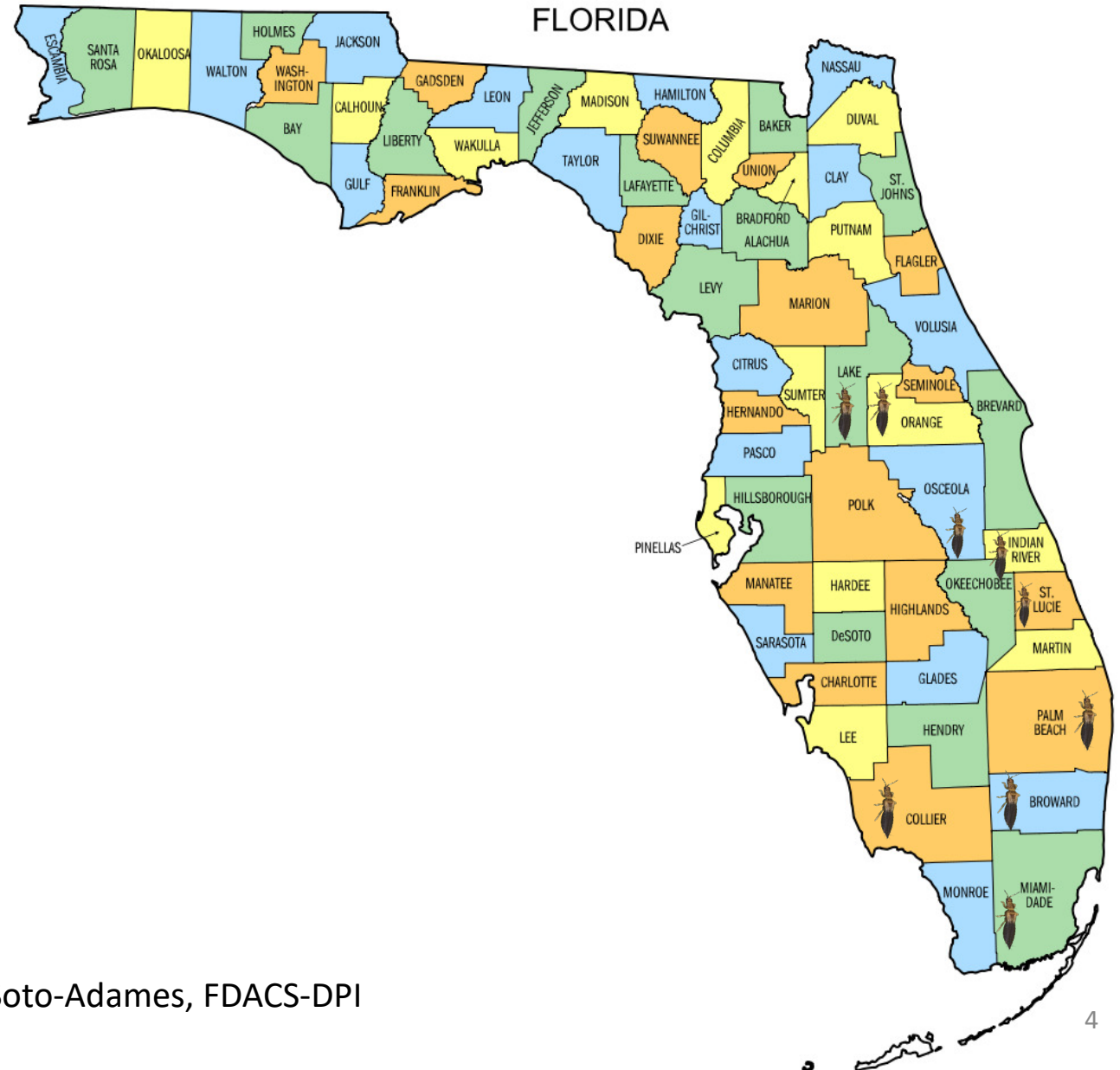
Felipe N. Soto-Adames, Ph.D., Bureau of Entomology, Nematology and Plant Pathology  
[DPIHelpline@FDACS.gov](mailto:DPIHelpline@FDACS.gov) or 1-888-397-1517

Sri Lanka, Indonesia, Malaysia, Singapore, Taiwan, India, China, Philippines, Thailand, Australia, Solomon Islands, Tanzania, Mauritius, Reunion, Greece, the Netherlands, France, Spain, Hawaii



# Distribution in FL

1. Miami-Dade
2. Palm Beach
3. Orange
4. Lake
5. Osceola
6. Indian River
7. Broward
8. Collier
9. St. Lucie



Info: Felipe Soto-Adames, FDACS-DPI

# Ornamental Hosts in FL

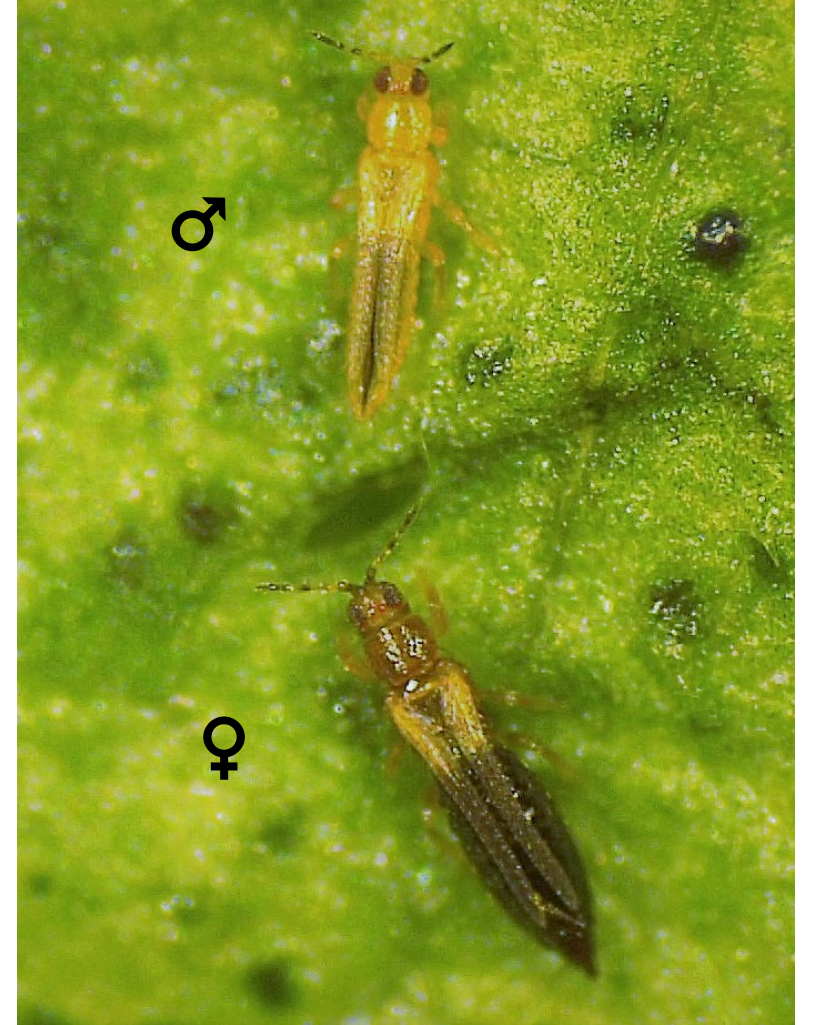
1. Anthurium
2. Hoya
3. Gardenia
4. Mexican butterfly weed
5. Schefflera
6. Mandevilla/Dipladenia
7. Ixora
8. Ficus

9. Seagrape
10. *Phlox* sp.
11. Sweet alyssum
12. Marigold
13. Windmill jasmine
14. *Impatiens* sp.
15. Tropical hibiscus
16. *Ruellia* sp.



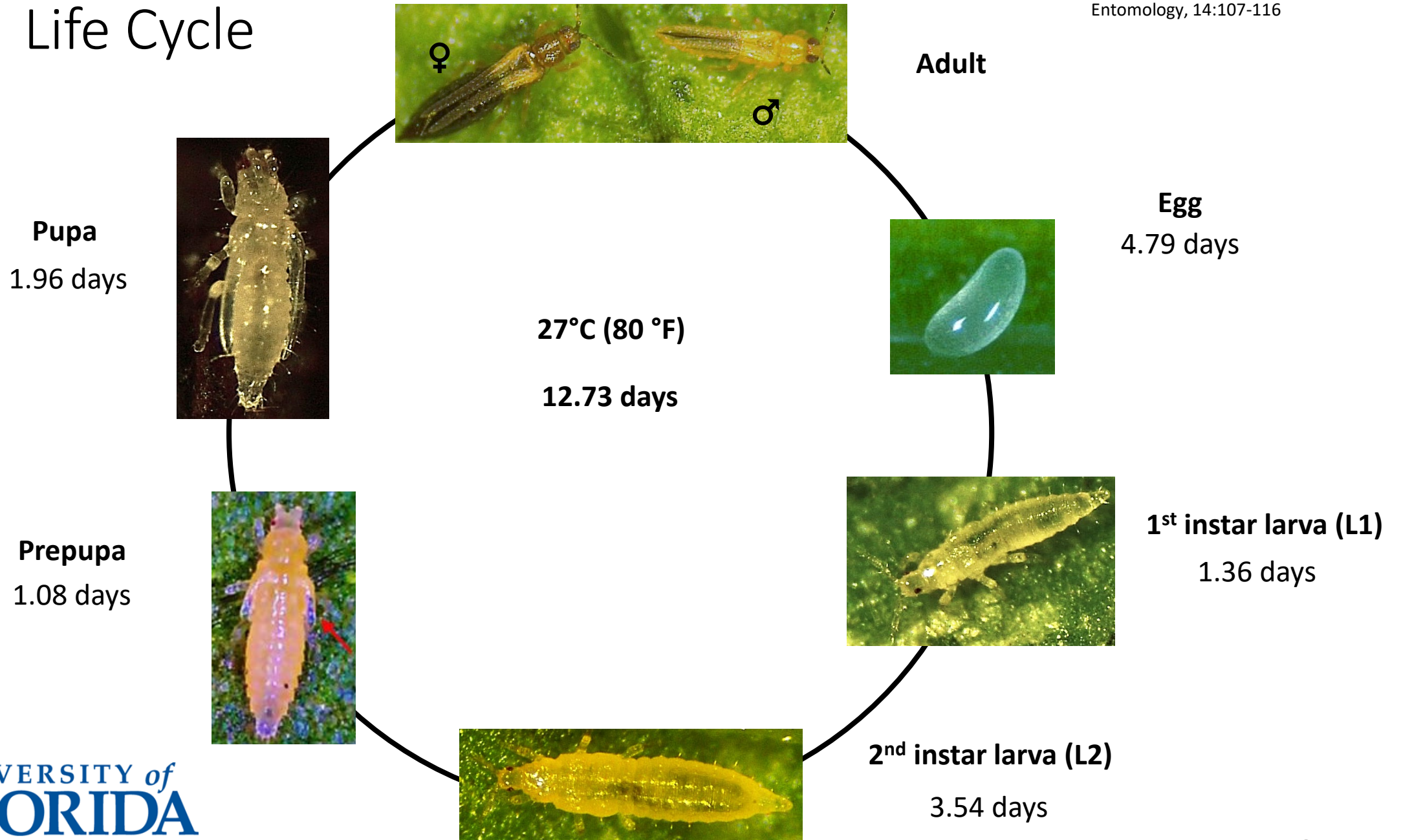
# *Thrips parvispinus*

- Female: 1 mm long
- Male: 0.6 mm long





# Life Cycle







# Biology

- Females live ~ 9 days
- Males live ~ 6 days
- Fecundity: 15.33 eggs/female/day



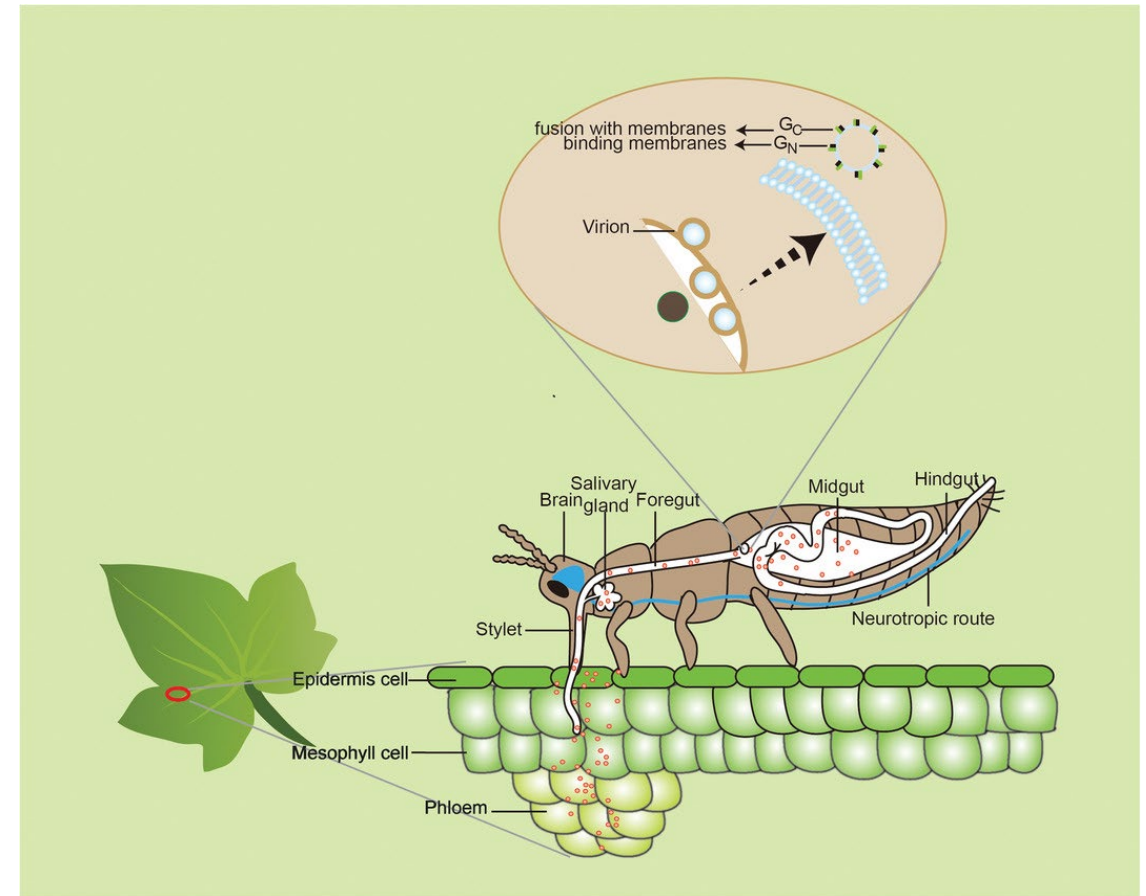
Photos: <https://www.thrips-id.com/en/>

# Chemical Communication



# Mouthparts-Feeding

- Rasping-sucking
- Scrape the leave surface to damage it
- Suck the plant juices



Picture: Insect Science, Volume: 27, Issue: 4, Pages: 626-645, First published: 27 August 2019, DOI: (10.1111/1744-7917.12721)

# Damage on *Anthurium*



# Damage on *Hoya*



Photos: Felipe Soto-Adames, FDACS-DPI, Pest Alert, 2020, FDACS-P-01926

# Damage on Gardenia



# Damage on Gardenia





# Damage on Dipladenia / Mandevilla



# Damage on Ixora



# Damage on *Schefflera arboricola*



Photos: Lance Osborne, UF/IFAS-MREC

# Damage on Seagrape



Photos: Lance Osborne, UF/IFAS-MREC

# Chemical Control Bioassays

- Contact insecticides - No neonicotinoids (4A)
- Spray on thrips (direct) or plants (indirect)
- Thrips stages: L1, L2 and adult females
- N = 10 per treatment
- T = 27 °C, 70 ± 10%, 12L:12D
- FDACS-DPI permit #2022-105



Photo: <https://www.thrips-id.com/en/>

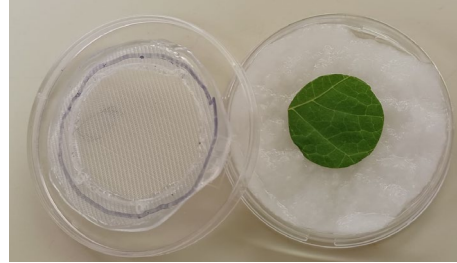
# Tested Contact Insecticides

#	Product Name	Active Ingredient	Group	Rate	Site
1	Timectin 0.15 EC	Abamectin	6	8 fl oz/100 gal	S, G, N
2	Acephate 97 UP	Acephate	1B	8 oz/ 100 gal	G, N, L
3	Talstar Nursery Flowable	Bifenthrin	3A	21.7 fl oz/ 100 gal	G, N, L
4	Sevin SL	Carbaryl	1A	1 qt/ 100 gal	G, N, L
5	Conserve SC	Spinosad	5	0.1 fl oz/ 1 gal	G, N, L
6	Hachi-Hachi	Tolfenpyrad	21A	27 fl oz/ 100 gal	G, N, S
7	Mainspring GNL	Cyantraniliprole	28	8 fl oz/ 100 gal	G, N, I, L
8	Azasol	Azadirachtin	Unknown	6 oz/ 50 gal	G, N, I, L
9	Xxpire	Sufloxaflo-Spinetoram	4C-5	2.75 oz/ 100 gal	G, N, L not residential use
10	Altus	Flupyradifurone	4D	14 fl oz/ 100 gal	G, N, L not residential use

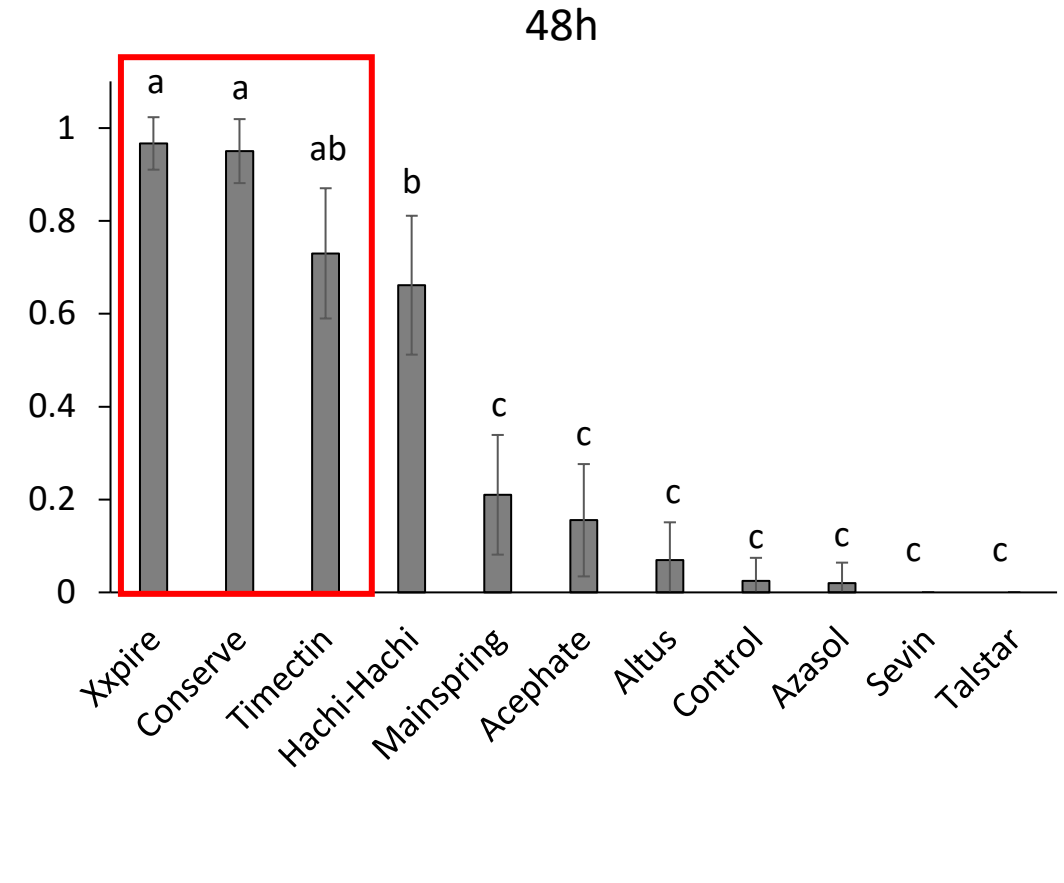
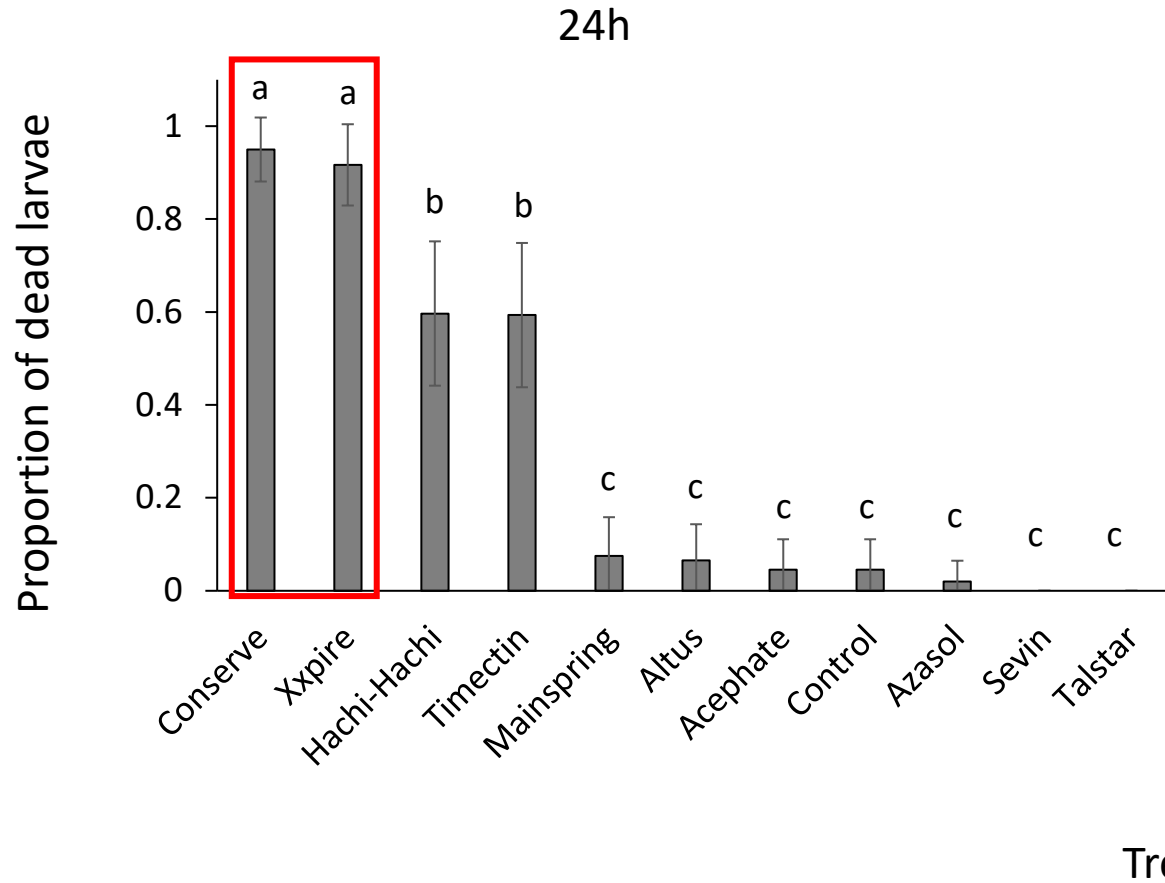
S: shadehouse, G: greenhouse, N: nursery, L: landscape, I: interior

# Direct spray on *Thrips parvispinus*

1. Bean leaf discs 24mm diameter
2. Five L1, L2 or adults
3. Treatment application → Potter Tower
4. Mortality at 24h and 48h post treatment
5. Feeding damage at 48h → Image J



# First-instar Larval Mortality (Direct)



GLMM,  $P < 0.05$



# Feeding Damage - First-instar Larvae (Direct)



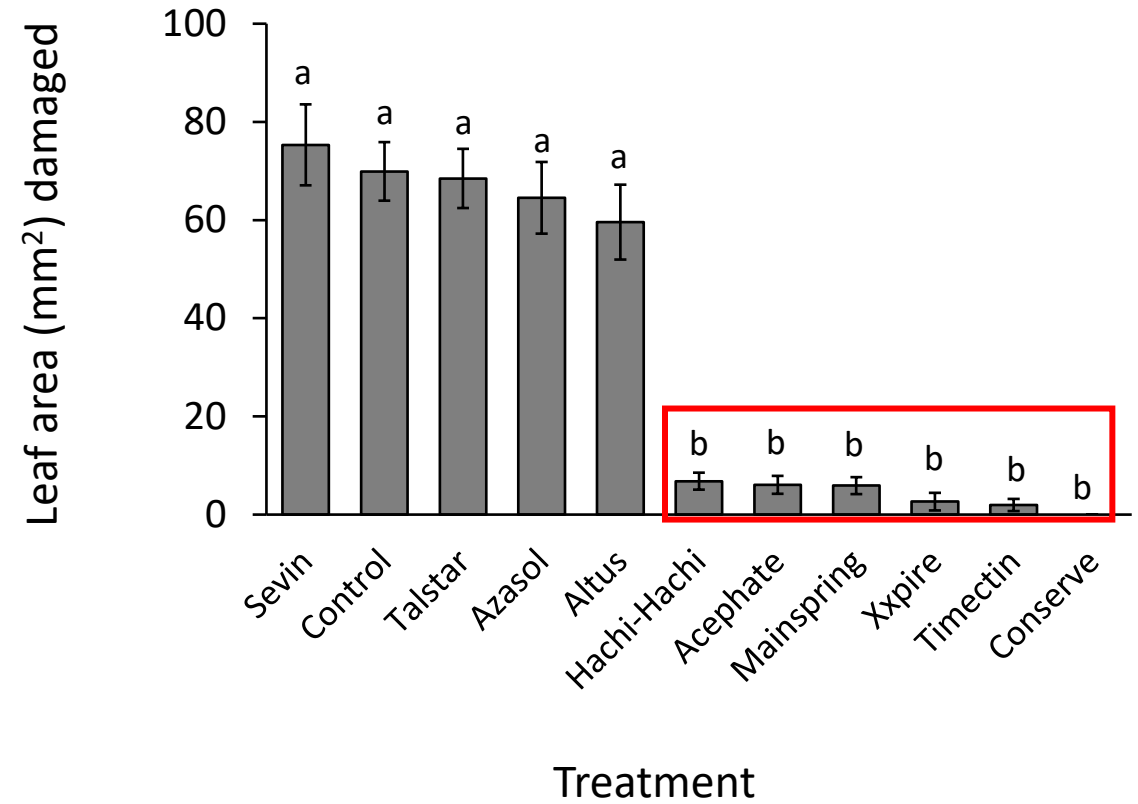
Control



Sevin



Conserve

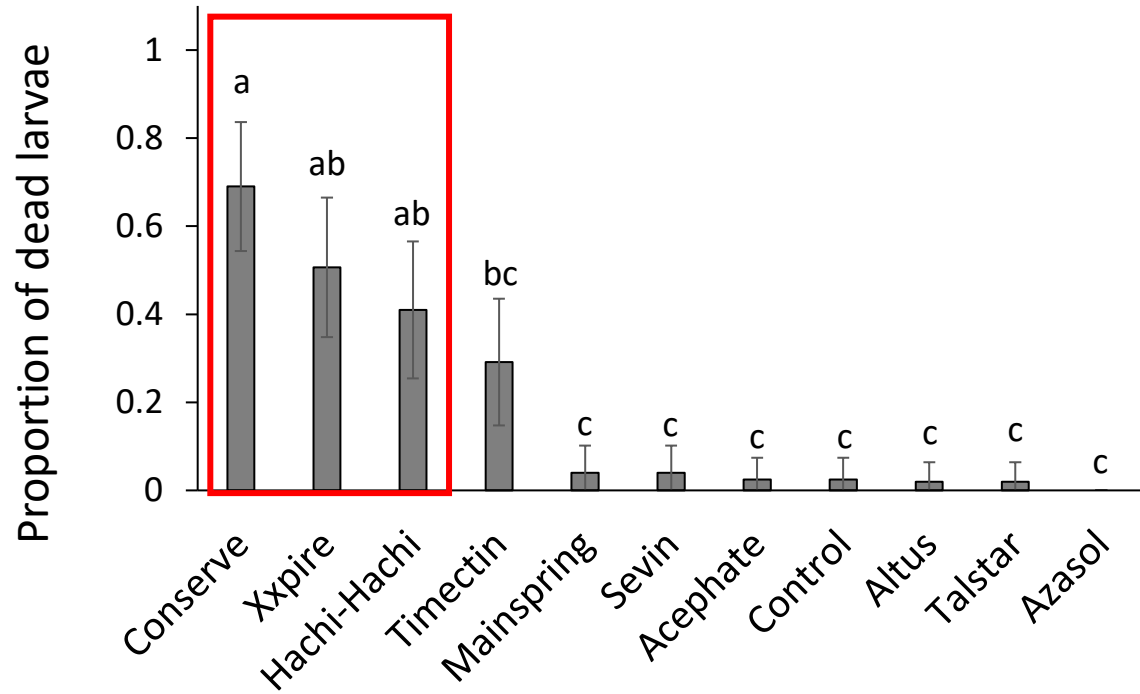


GLM, P<0.05

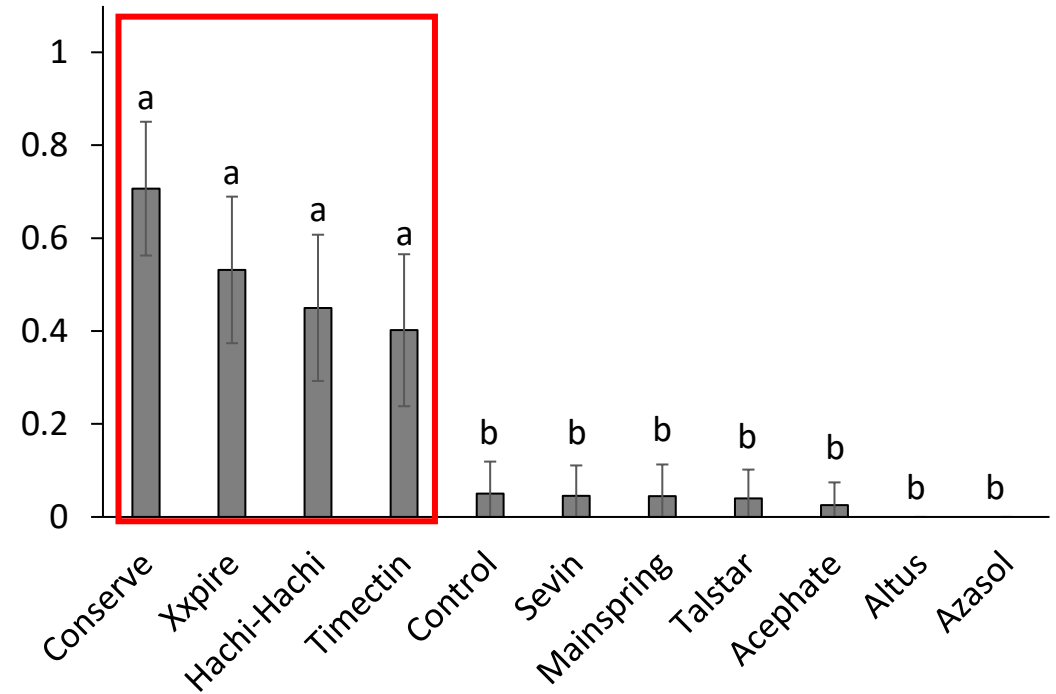
# Second-instar Larval Mortality (Direct)



24h



48h



Treatment

GLMM, P<0.05

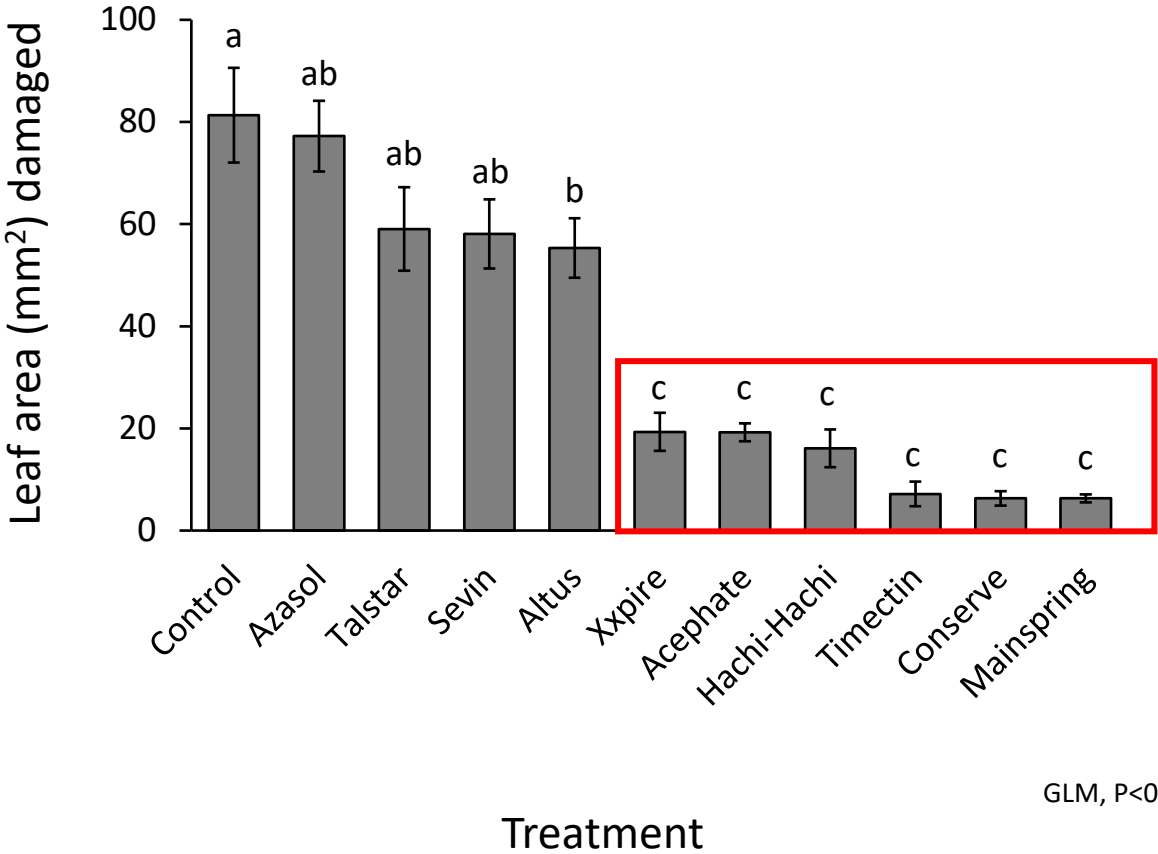
# Feeding Damage - Second-instar Larvae (Direct)



Control

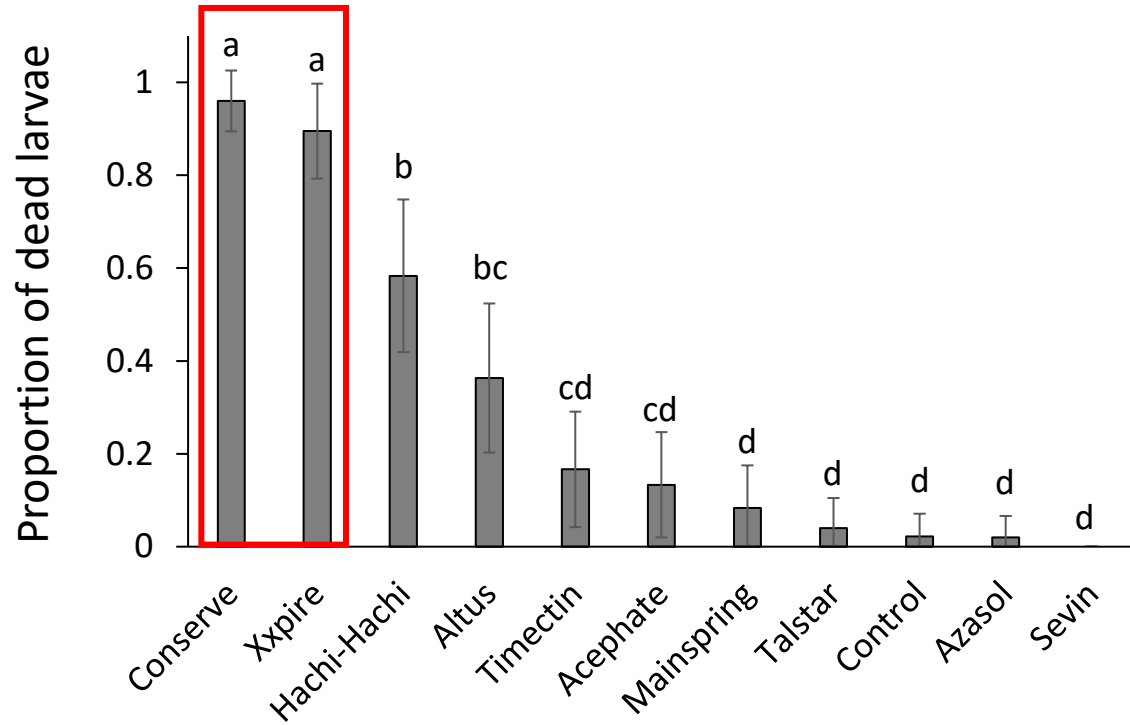


Mainspring



GLM, P<0.05

# Adult Mortality & Feeding Damage (Direct)



Treatment

GLM,  $P < 0.05$

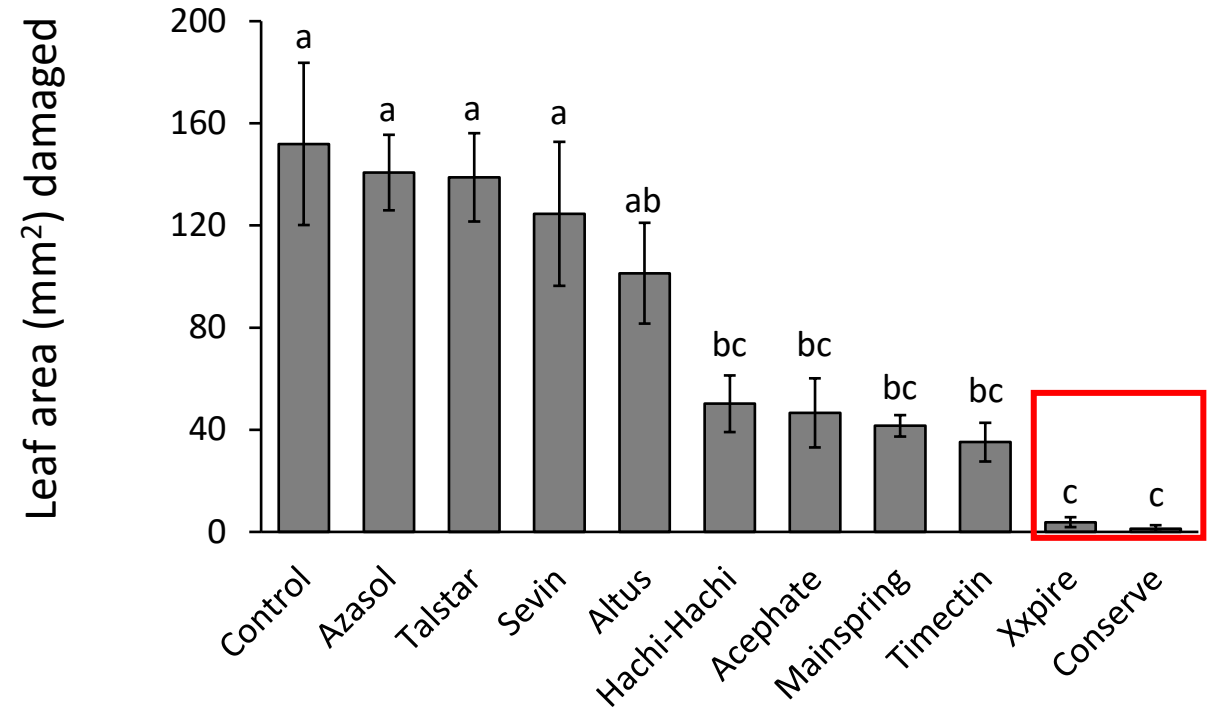
# Adult Mortality & Feeding Damage (Direct)



Control



Conserve

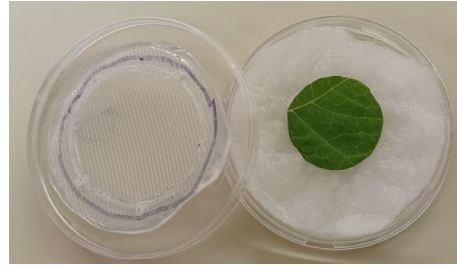


Treatment

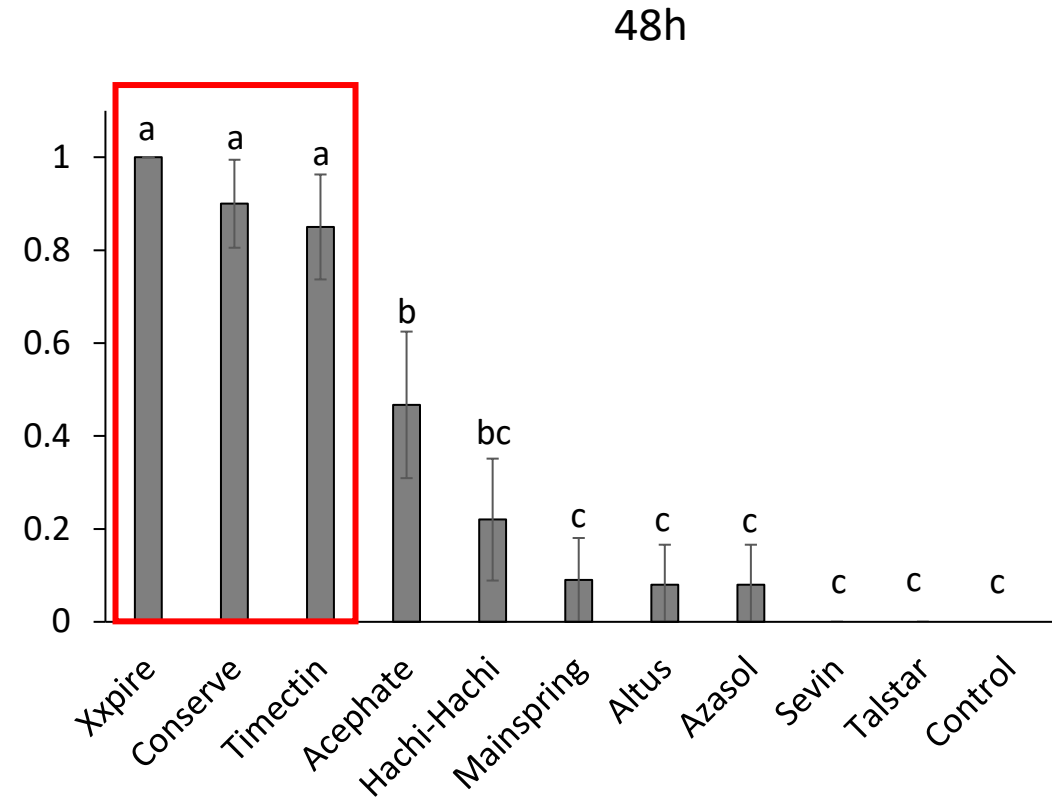
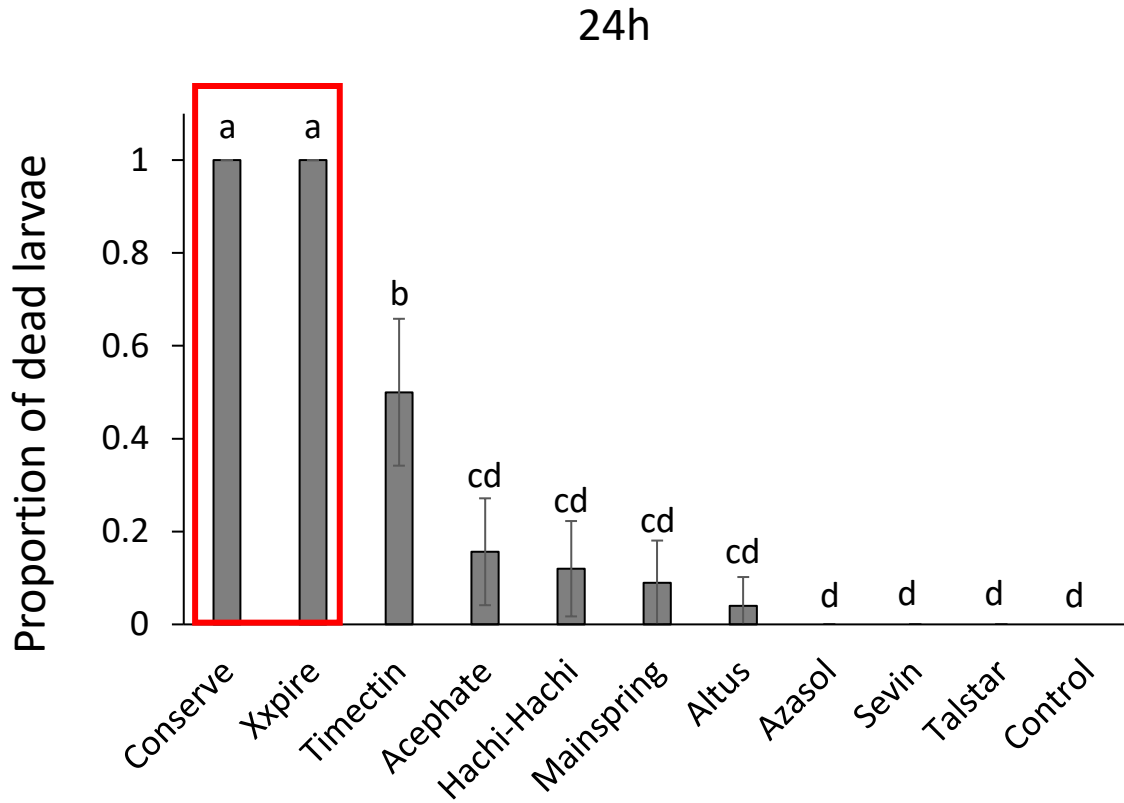
GLM, P<0.05

# Spray on Plants – Indirect Spray

1. Treatment application → bean plants
2. Bean leaf discs 24mm diameter
3. Five L1, L2 or adults
4. Mortality at 24h and 48h post treatment
5. Feeding damage at 48h → Image J



# First-instar Larval Mortality (Indirect)



Treatment

GLMM, P<0.05

# Feeding Damage - First-instar Larvae (Indirect)



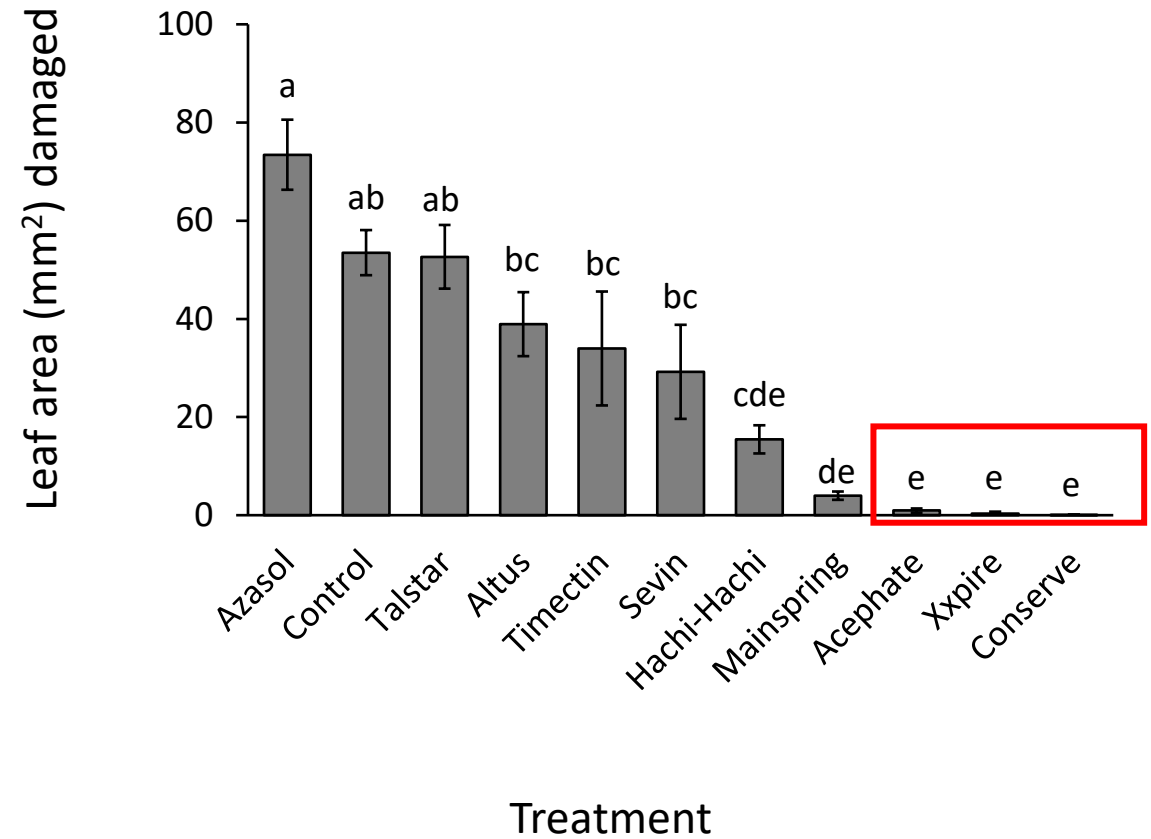
Azasol



Control



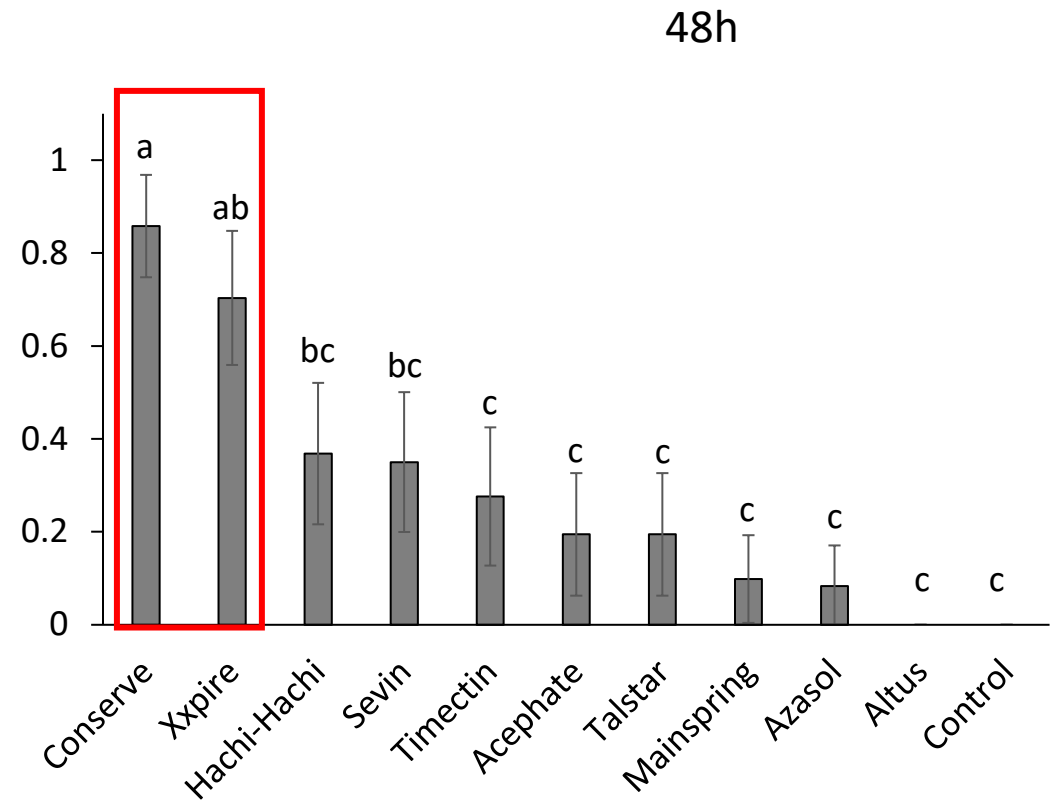
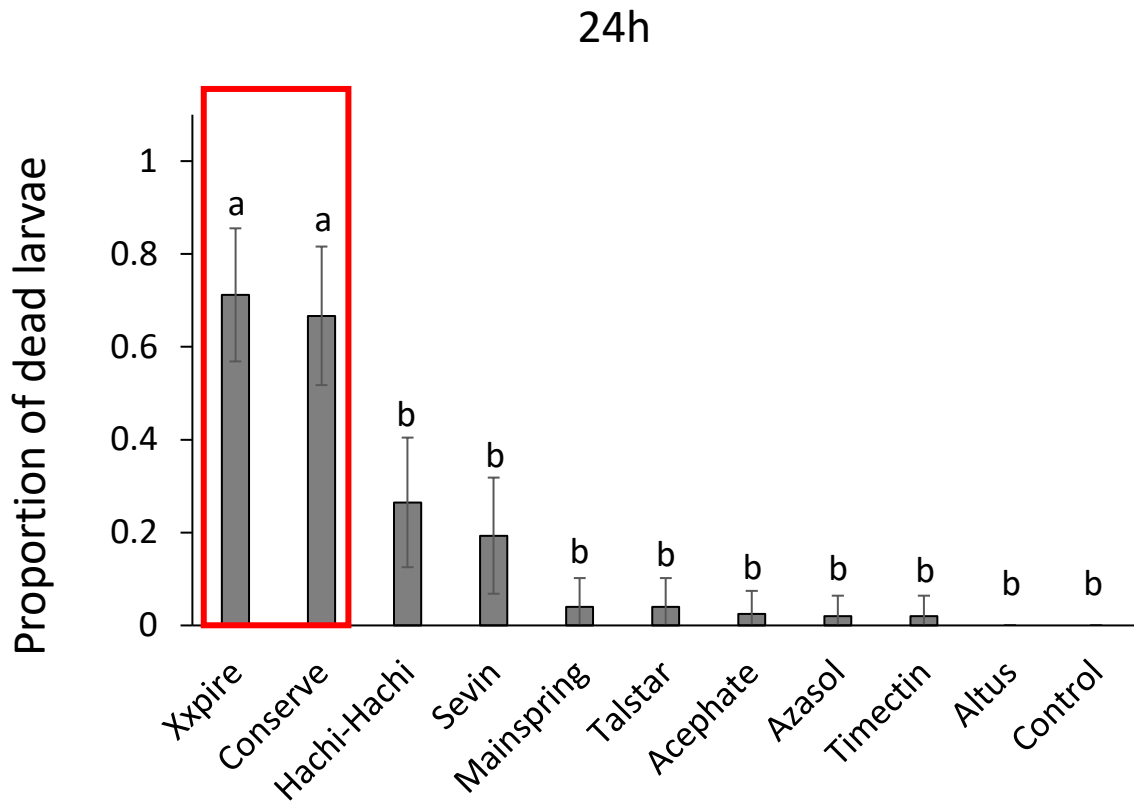
Conserve



GLM, P<0.05



# Second-instar Larval Mortality (Indirect)



Treatment

GLMM, P<0.05

# Feeding Damage - Second-instar Larvae (Indirect)



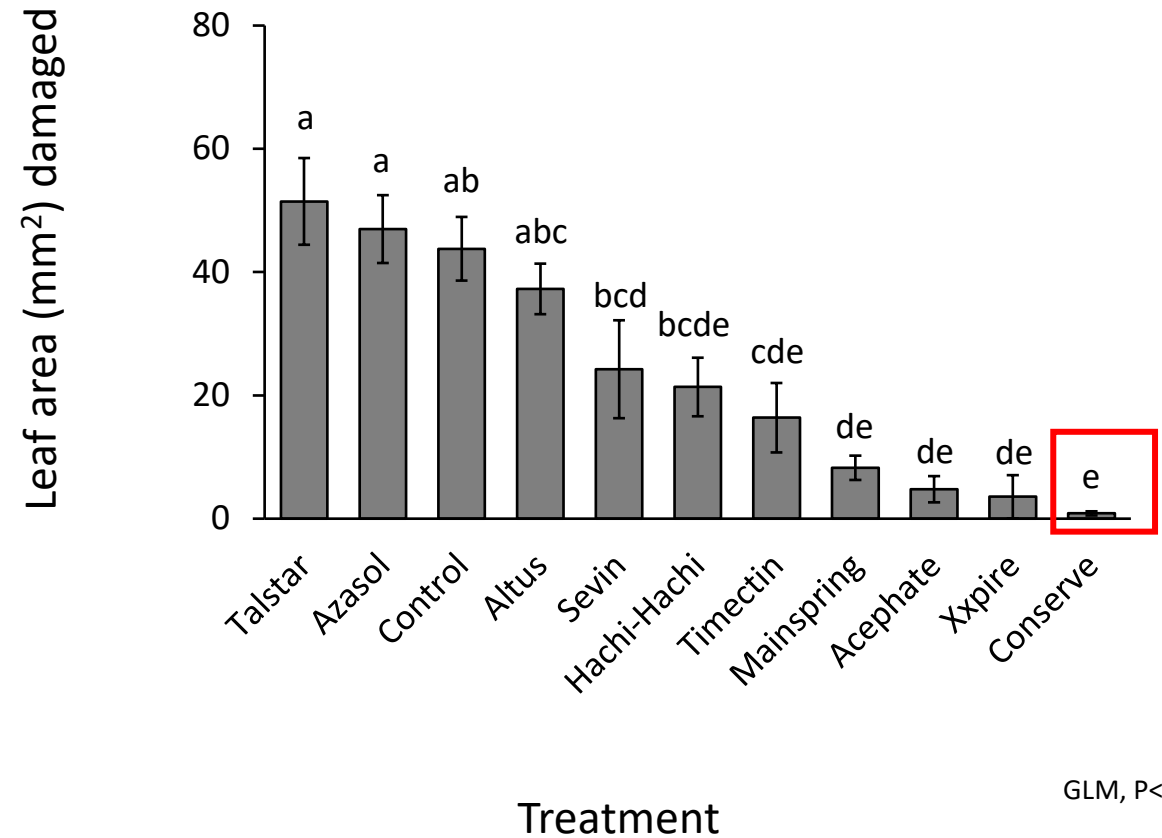
Talstar



Control

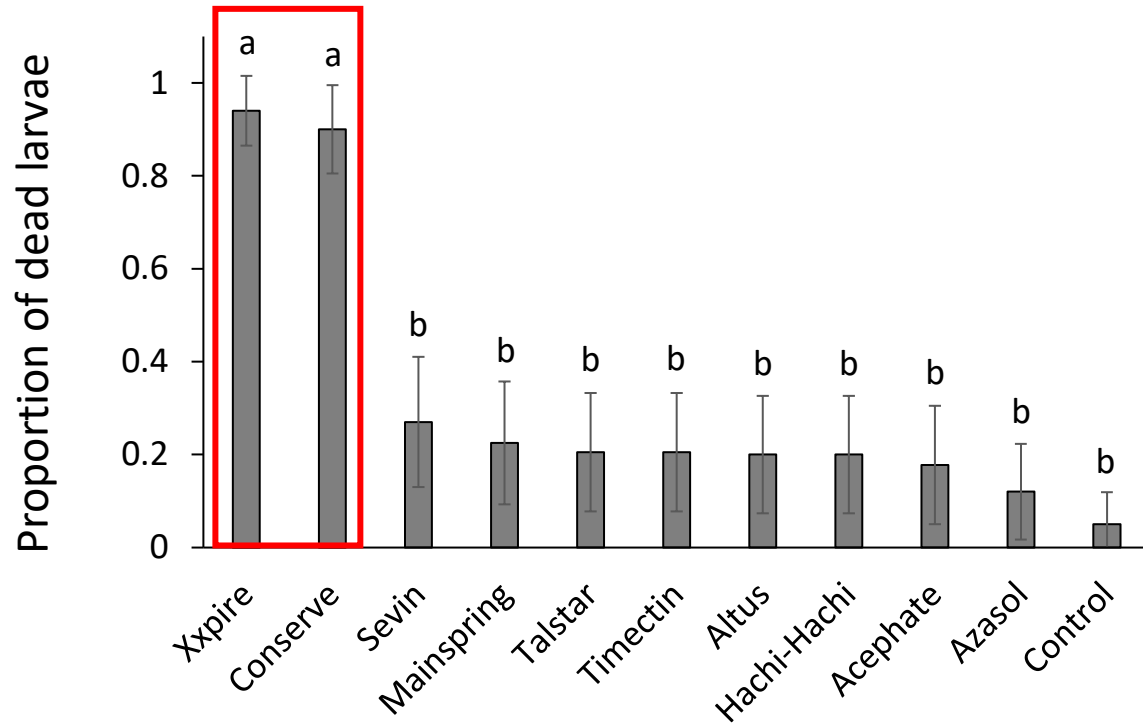


Conserve



GLM, P<0.05

# Adult Mortality & Feeding Damage (Indirect)



GLMM,  $P < 0.05$

Treatment

GLM,  $P < 0.05$

# Adult Mortality & Feeding Damage (Indirect)



Talstar

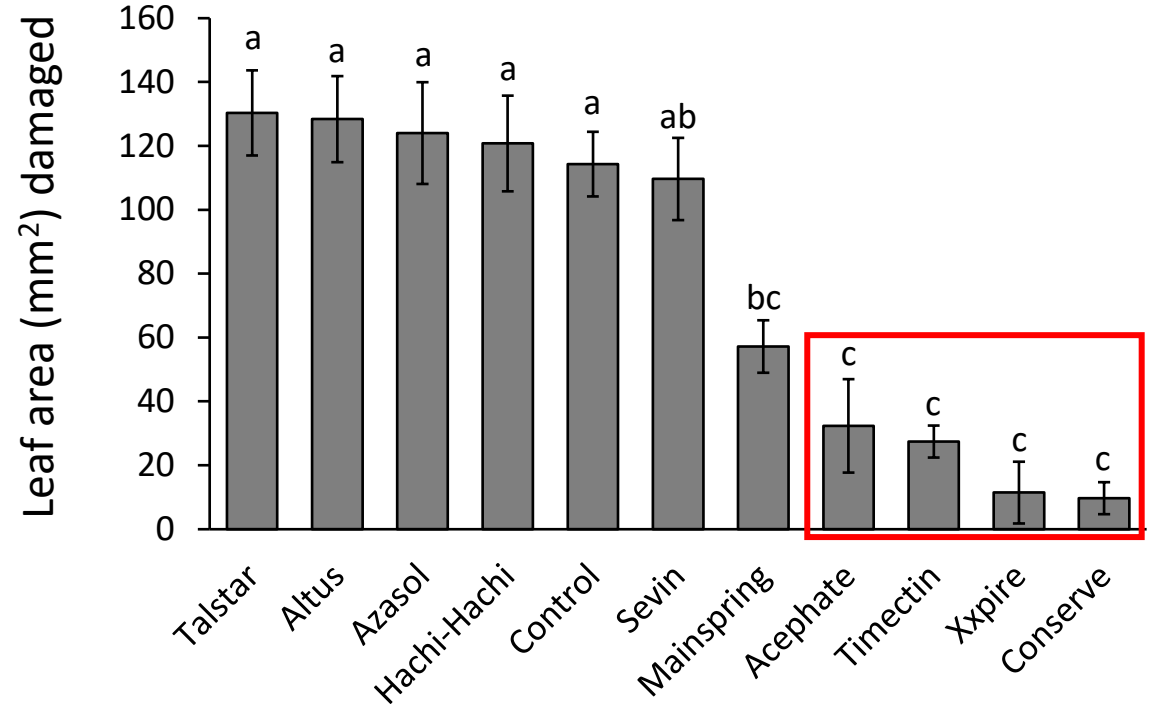


Control



Conserve

GLMM,  $P < 0.05$



Treatment

GLM,  $P < 0.05$

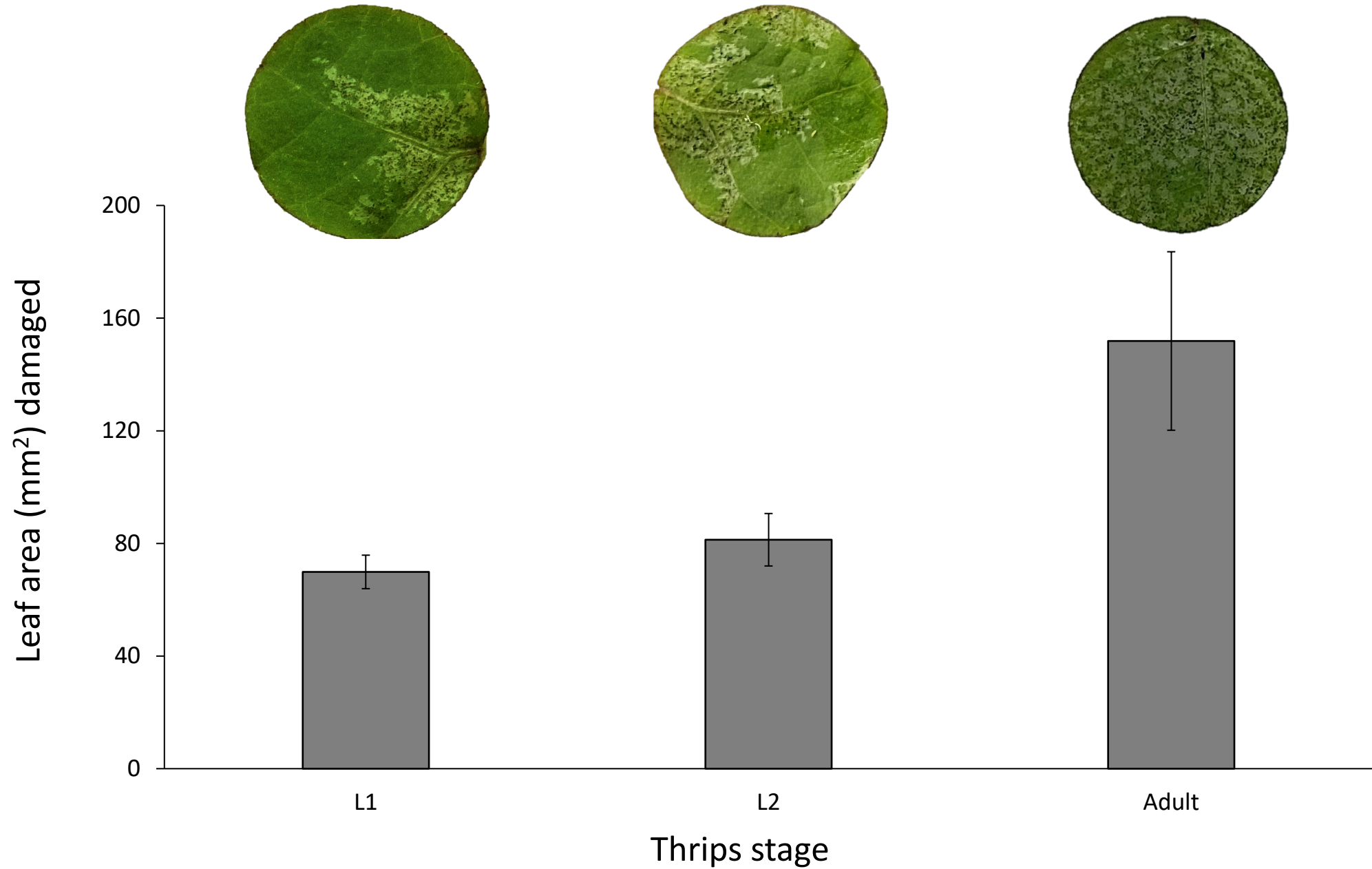
# Overall Efficacy

Treatment	L1 Direct	L1 Indirect	L1 Feeding	L2 Direct	L2 Indirect	L2 Feeding	Adult Direct	Adult Indirect	Adult Feeding
Xxpire	X	X	X	X	X		X	X	X
Conserve SC	X	X	X	X	X	X	X	X	X
Timectin	X	X	X	X		X			X
Acephate			X						X
Hatchi-Hatchi SC			X	X	X				
Mainspring GNL			X			X			

# Overall Efficacy

Treatment	Group	L1 Direct	L1 Indirect	L1 Feeding	L2 Direct	L2 Indirect	L2 Feeding	Adult Direct	Adult Indirect	Adult Feeding
<b>Xpire</b>	<b>4C + 5</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>	<b>X</b>
<b>Conserve SC</b>	<b>5</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Timectin</b>	<b>6</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>		<b>X</b>			<b>X</b>
<b>Acephate</b>	<b>1B</b>			<b>X</b>						<b>X</b>
<b>Hatchi-Hatchi SC</b>	<b>21A</b>			<b>X</b>	<b>X</b>	<b>X</b>				
<b>Mainspring GNL</b>	<b>28</b>			<b>X</b>			<b>X</b>			

# Feeding Damage



# Take-home Messages

- Conserve and Xxpire highest efficacy
- Timectin and Hatchi-Hatchi good alternatives for rotation
- 1<sup>st</sup> instar larvae more susceptible
- Adults cause more feeding damage than larvae



# Response to *Thrips parvispinus*

- Establish a monitoring program for thrips!
  - Symptoms
  - Traps
- Accurately identify the thrips species
- Rotate contact insecticides
- Sanitation
- Follow FDACS-DPI guidance regarding regulation!

# Future Evaluations

#	Active Ingredient	Product Name	Group
1	Cyfluthrin	Decathlon 20 WP	3A
2	Pyriproxyfen	Rycar	9B
3	Spirotetramat	Kontos	23
4	Cyclaniliprole	Sarisa	28
5	Cyclaniliprole-Flonicamid	Pradia	28-29
6	Pyriproxyfen	Fulcrum	7C
7	Acetamiprid	Tristar	4A
8	Flonicamid	Aria	29
9	Novaluron	Pedestal	15
10	Chlorfenapyr	Piston	13
11	Pyridalyl	Overture	Unclassified

# Resources



## THRIPS PARVISPINUS (KARNY), AN EMERGING INVASIVE AND REGULATED PEST IN THE UNITED STATES

**Authors:** [Dr. Muhammad Z. Ahmed](#), Subtropical Insects and Horticulture Research, Agricultural Research Service, U.S. Department of Agriculture, Ft. Pierce, Florida; [Dr. Alexandra Revynthi](#), Tropical Research and Education Center, UF/IFAS, University of Florida, Homestead, FL; [Dr. Cindy L. McKenzie](#), Subtropical Insects and Horticulture Research, Agricultural Research Service, U.S. Department of Agriculture, Ft. Pierce, Florida; and [Dr. Lance S. Osborne](#), Mid-Florida Research and Education Center, UF/IFAS, University of Florida, Apopka, FL.

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# Thank You!

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*Thrips parvispinus* Task Force

