

Dip Treatments to Disinfest Cuttings of *Thrips parvispinus*

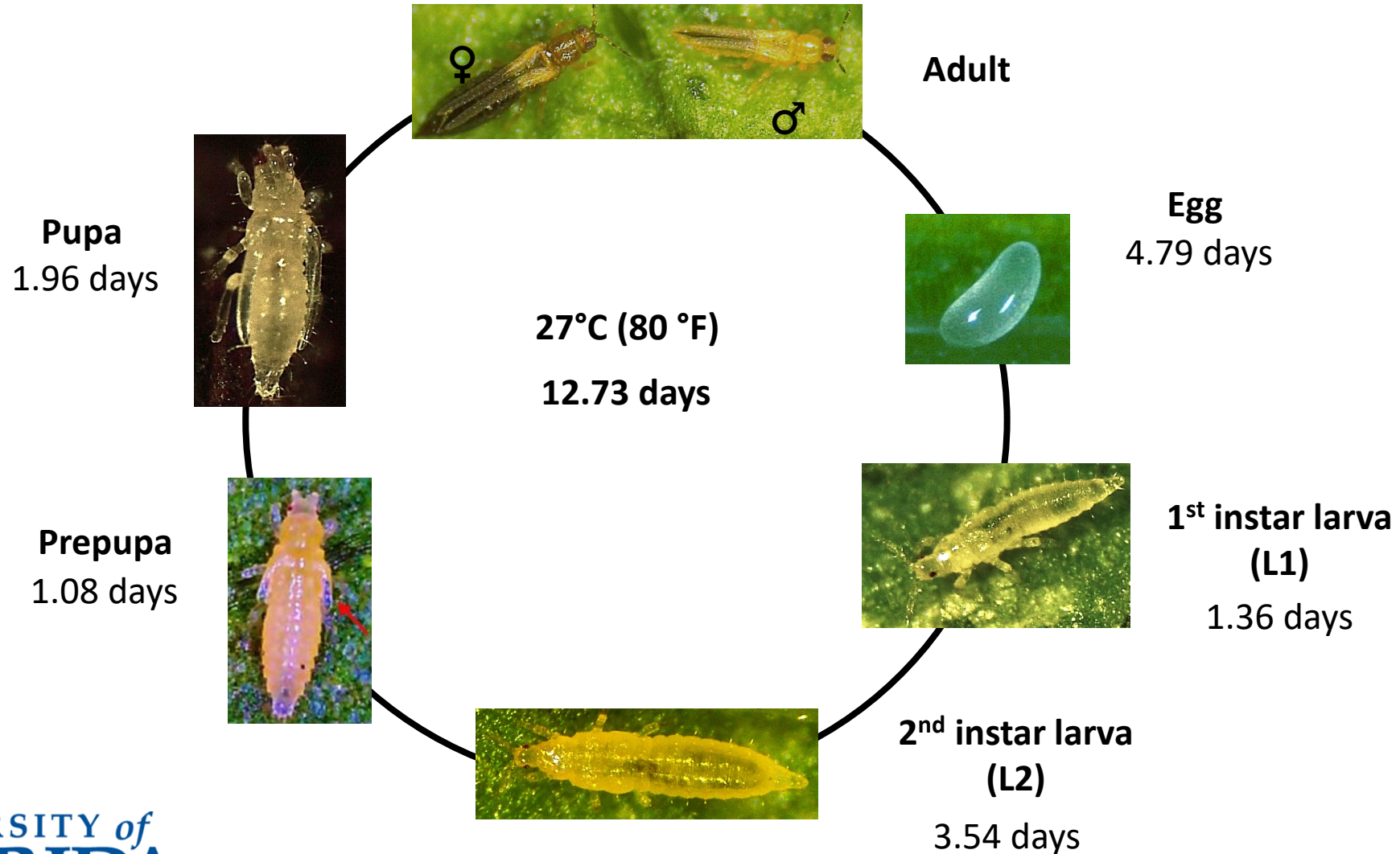


Livia Ataide

Tuesday, October 01, 2024

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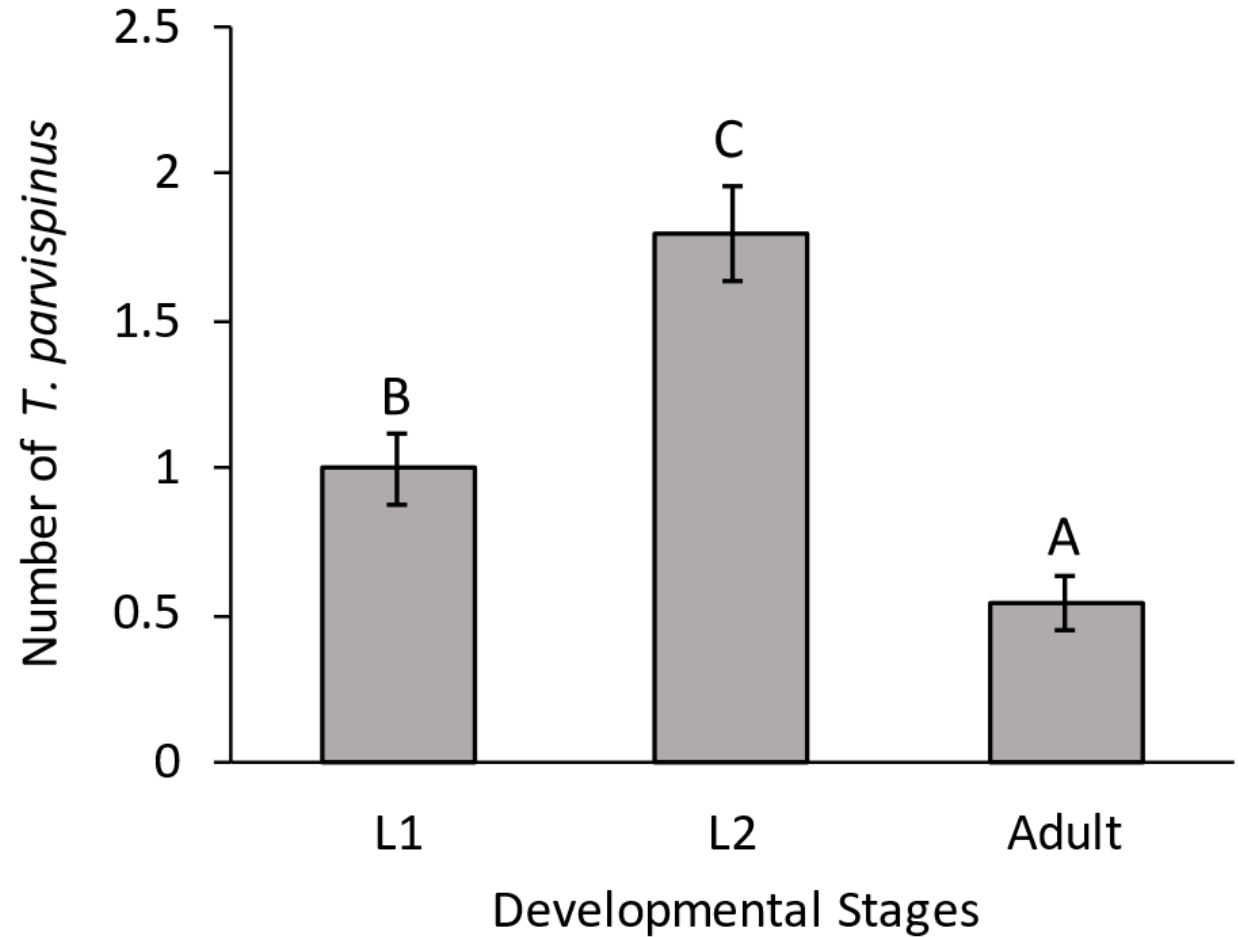
Which *T. parvispinus* Stage to Target?



Which *T. parvispinus* Stage to Target?

- Sampling 140 mandevilla plants
- Count number of larvae (L1 and L2) and adults

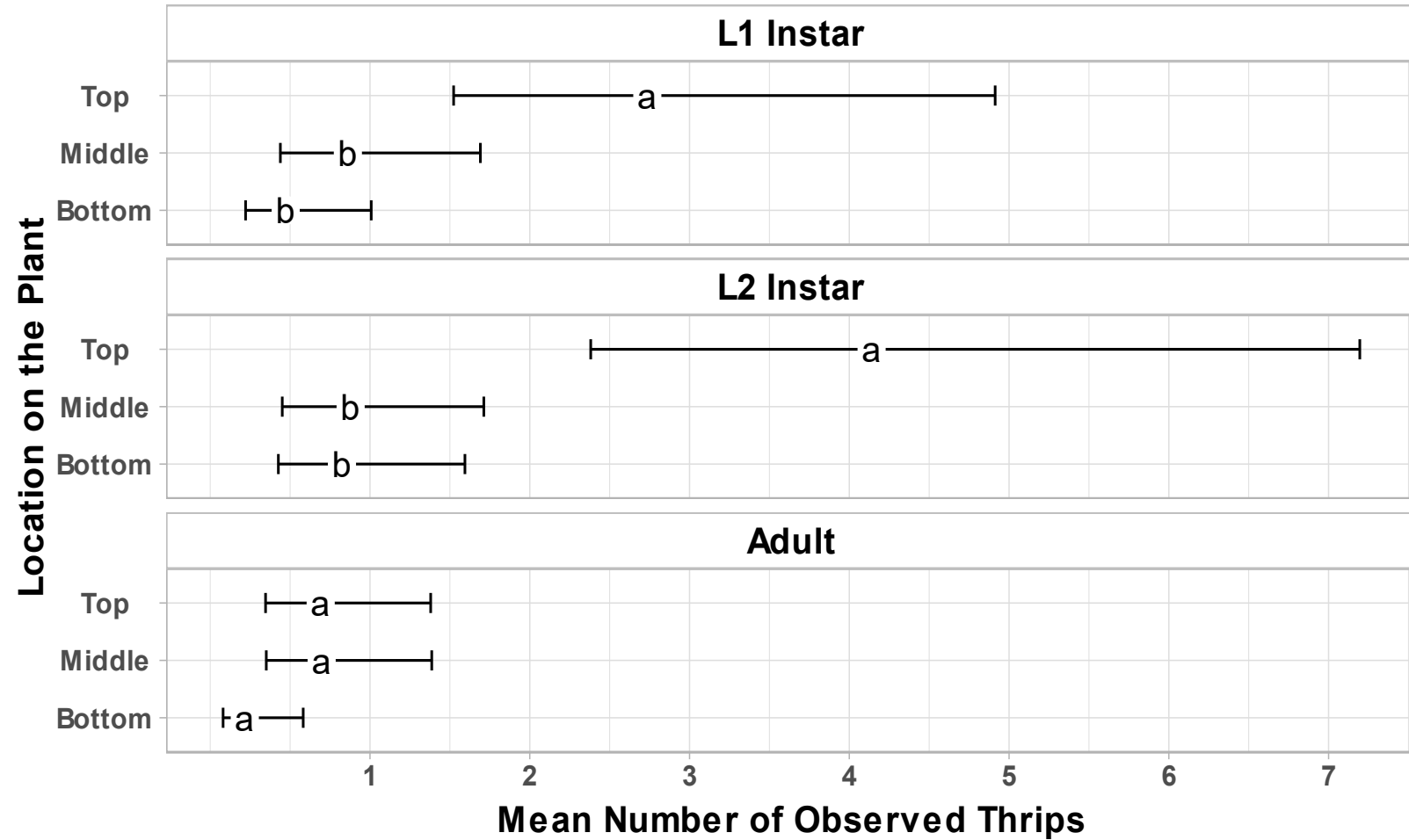
Target -> L2 larval stage



Which Location of the Plant Does the Larvae Prefer?

- Sampling 60 mandevilla plants
- Count number of larvae (L1 and L2) and adults on plant canopy

L2 larval stage prefers young and soft plant tissues



Previously Tested Biorational Insecticides as Dip Treatments

#	Product Name	Active Ingredient	Rate	Site	EPA Registration #
1	Velifer	<i>Beauveria bassiana</i> strain PPRI 5339	13 fl oz/ 100gal	G	71840-22
2	Suffoil-X	Mineral oil	0.5%	G, N, L	48813-1-68539
3	Bee Safe 3-in-1	Sesame oil	3 fl oz/ 1 gal	S, G, N, L	FIFRA 25 (b) exempt
4	Bush doctor force of nature insect repellent	Garlic oil	128 fl oz/ 100 gal	S, G, N, L	FIFRA 25 (b) exempt
5	Ultrafine	Mineral oil	1%	G, N, L, I	86330-11
6	M-Pede	Potassium salts of fatty acids	2.5 fl oz/1 gal	G, N, L, I	10163-324

NOT registered for dipping in the U.S.

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

- We showed that Suffoil-X was the most efficacious biorational dislodging/ killing 80-100% of *T. parvispinus* larvae on mandevilla and gardenia cuttings

New Biorationals Insecticides Selected

Trade name	Active ingredient(s)	Rate *	Type of insecticide	Rate in 1L solution	Allows dipping on the label	Registration Number
Suffoil-X	Mineral oil	0.5%	Biorational	5 ml	yes	48813-1-68539
Velifer	<i>Beauveria bassiana</i> strain PPRI 5339	155.5 ml/ha	Microbial	1.02 ml	yes	71840-22
BotaniGard 22WP ¹	<i>Beauveria bassiana</i> strain GHA	57.3 g/ha	Microbial	3.74 g	yes	82074-2
BotaniGard ES ²	<i>Beauveria bassiana</i> strain GHA	12 ml/ha	Microbial	7.81 ml	yes	82074-1

Registered for dipping in the U.S.

*Rate calculations are based on the label-recommended amount of product to be applied to one hectare (ha)

¹ Wettable powder (WP)

² Liquid Emulsifiable Suspension (ES)

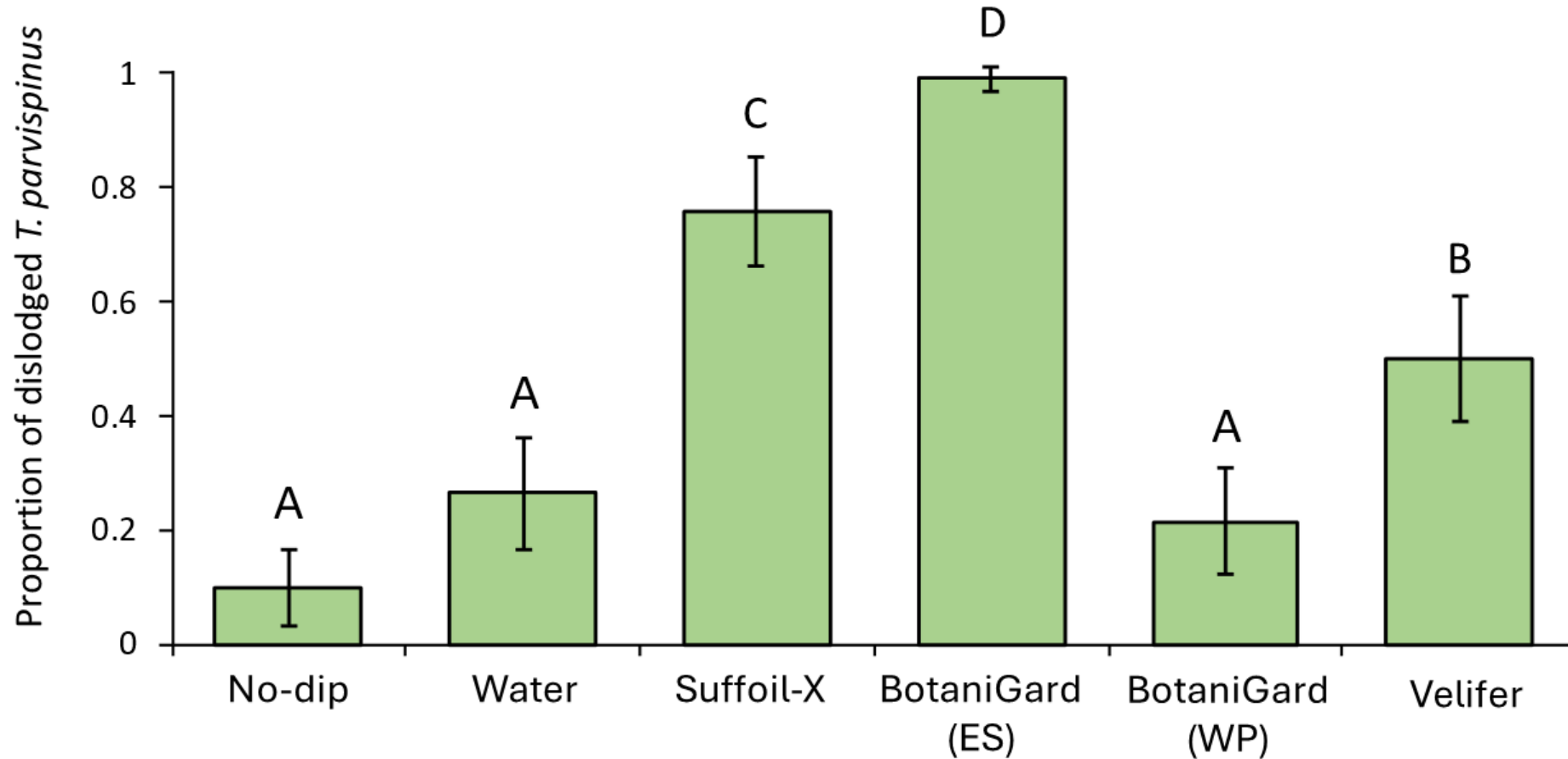
Evaluation of Dipping Against *T. parvispinus*

- Bean cuttings
- Release 10 L2 (allow them to adapt for 30 min)
- Dip cutting for 15s – gentle agitation
- Cuttings ($N = 20$) were kept on floral foam for two days
- Score the number of live and dead L2 – 1h, 24h

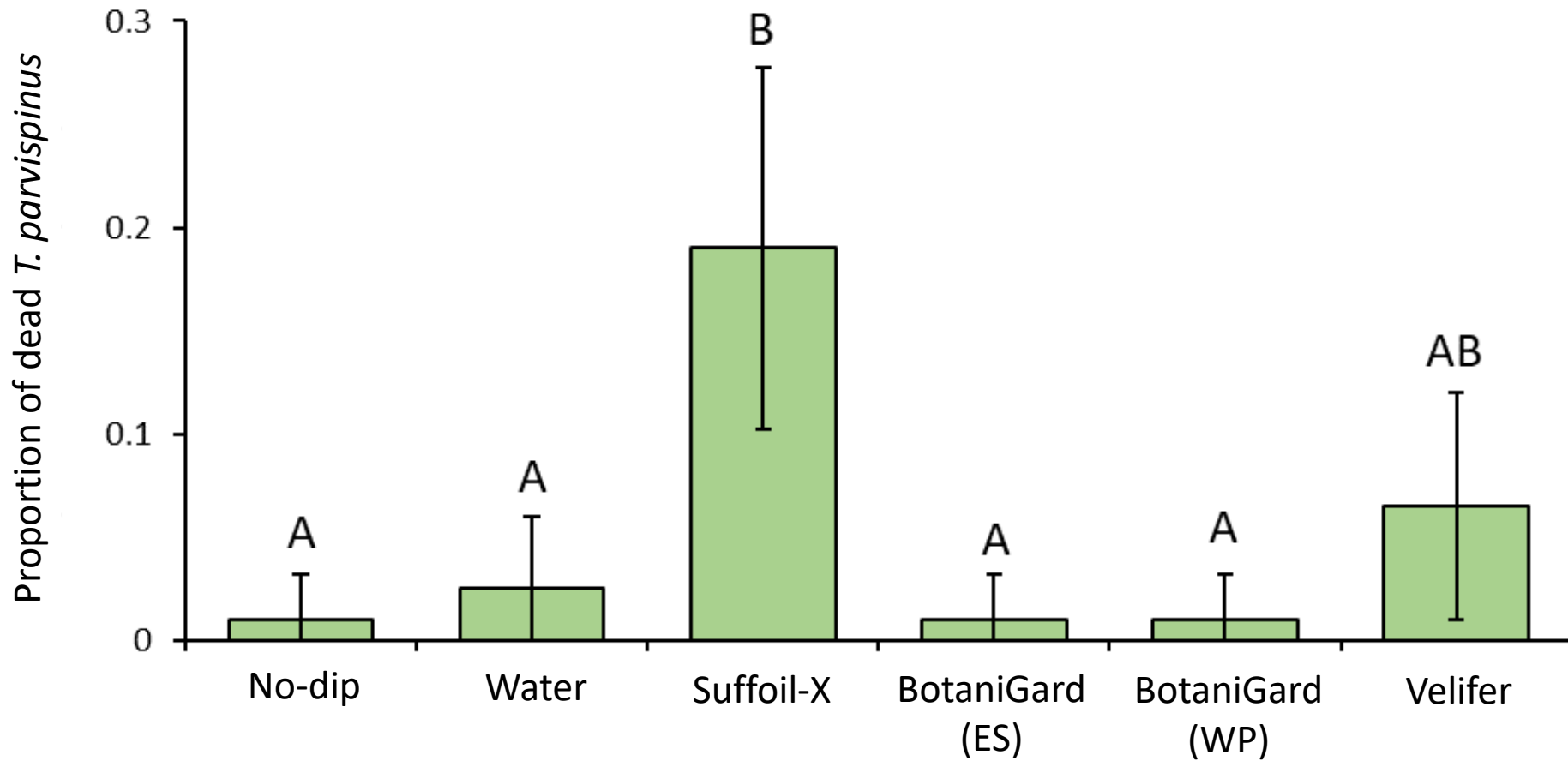


Photo: Livia Ataide

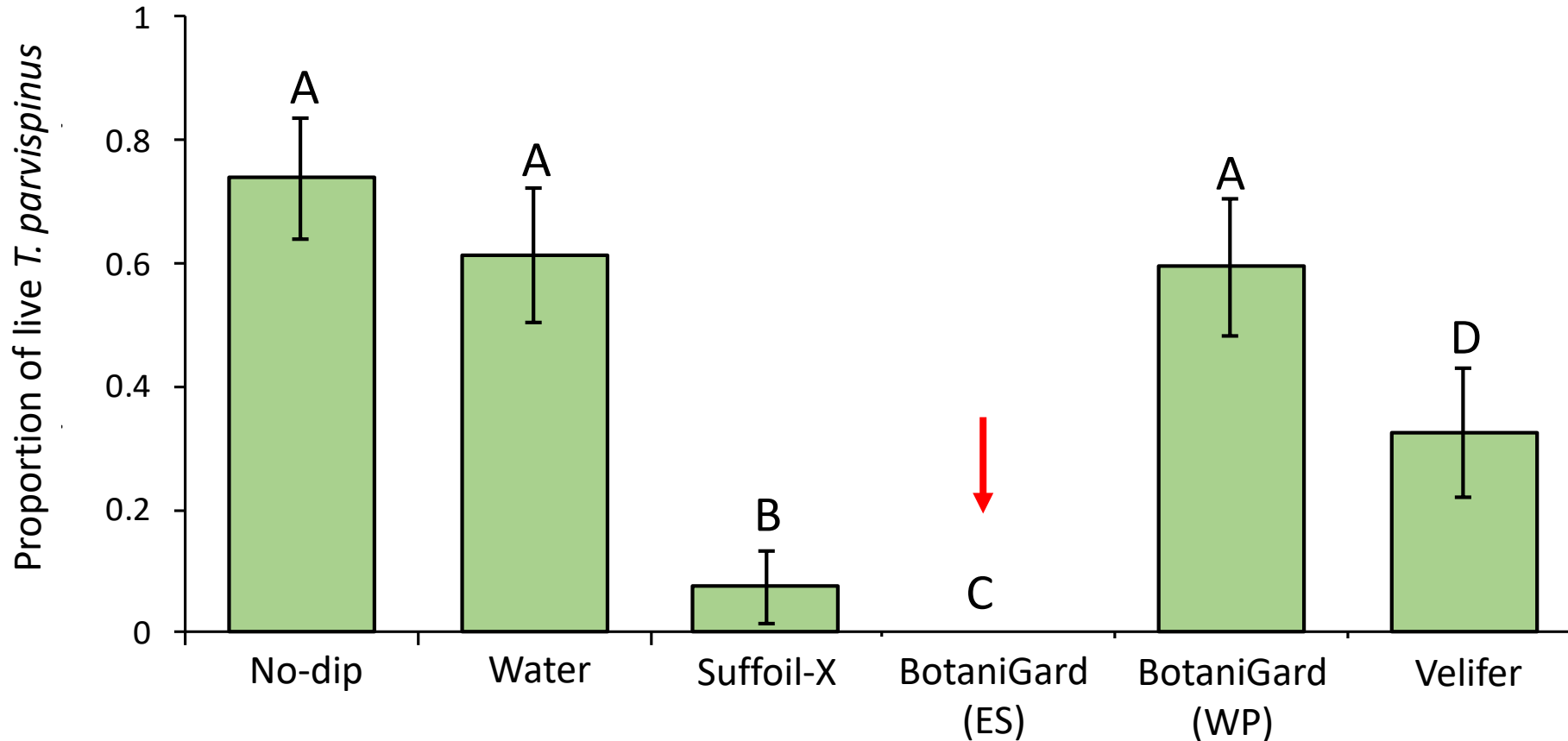
Thrips Dislodgment– Bean Cuttings



Thrips Mortality – Bean Cuttings



Live Thrips after Dipping – Bean Cuttings



Evaluation of Phytotoxicity

- Bean, mandevilla and gardenia cuttings
- Dip cutting for 15s – gentle agitation
- Cuttings ($N = 10$) were kept on floral foam for seven days
- Score the number of plants showing phytotoxicity

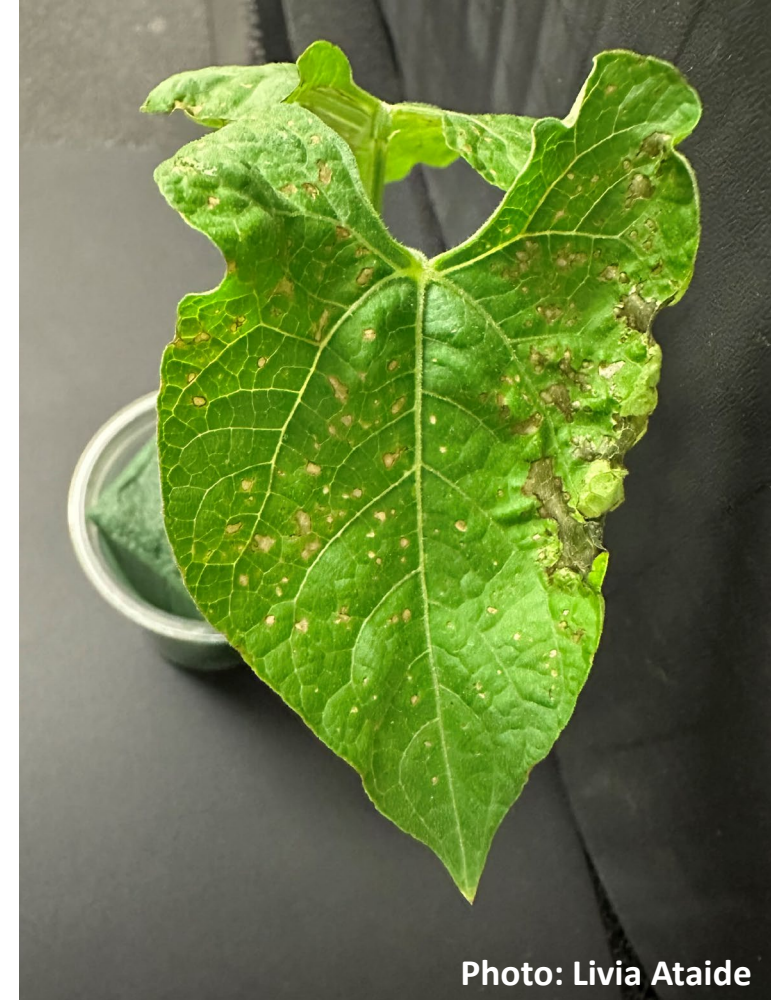


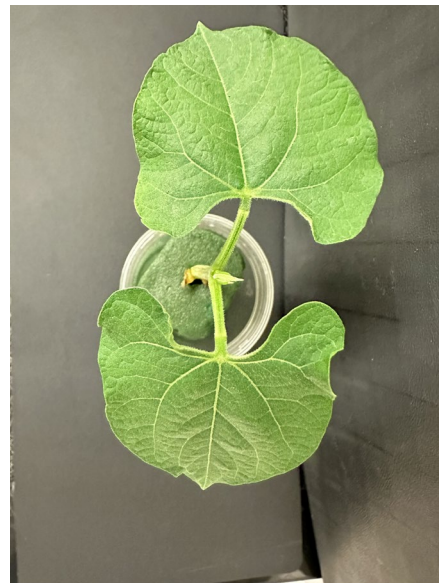
Photo: Livia Ataide

Phytotoxicity– Bean Cuttings

No-dip	●	●	●	●	●	●	●	●	●	●	Bean
Water	●	●	●	●	●	●	●	●	●	●	
Suffoil-X	●	●	●	●	●	●	●	●	●	●	
BotanGard-ES	●	●	●	●	●	●	●	●	●	●	
BotanGard-WP	●	●	●	●	●	●	●	●	●	●	
Velifer	●	●	●	●	●	●	●	●	●	●	
	1	2	3	4	5	6	7	8	9	10	

Number of cuttings

● No phytotoxicity
● Phytotoxicity



Water



Suffoil-X



BotaniGard-ES

Phytotoxicity– Mandevilla Cuttings

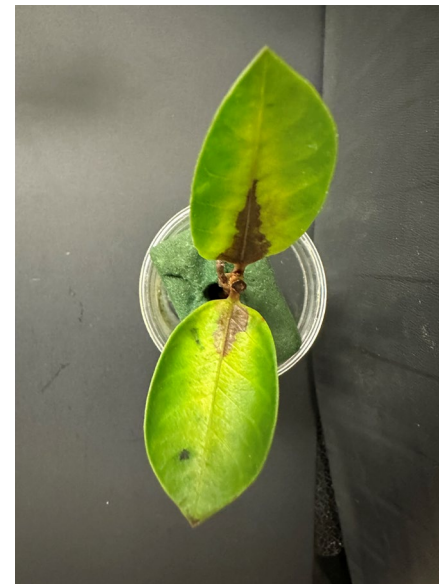
No-dip	●	●	●	●	●	●	●	●	●	●	Mandevilla
Water	●	●	●	●	●	●	●	●	●	●	
Suffoil-X	●	●	●	●	●	●	●	●	●	●	
BotanGard-ES	●	●	●	●	●	●	●	●	●	●	
BotanGard-WP	●	●	●	●	●	●	●	●	●	●	
Velifer	●	●	●	●	●	●	●	●	●	●	
	1	2	3	4	5	6	7	8	9	10	

Number of cuttings

● No phytotoxicity
● Phytotoxicity



Water



Suffoil-X



BotaniGard-ES

Phytotoxicity– Gardenia Cuttings

No-dip	●	●	●	●	●	●	●	●	●	●	Gardenia
Water	●	●	●	●	●	●	●	●	●	●	
Suffoil-X	●	●	●	●	●	●	●	●	●	●	
BotanGard-ES	●	●	●	●	●	●	●	●	●	●	
BotanGard-WP	●	●	●	●	●	●	●	●	●	●	
Velifer	●	●	●	●	●	●	●	●	●	●	
	1	2	3	4	5	6	7	8	9	10	

Number of cuttings

● No phytotoxicity
● Phytotoxicity



Water



Suffoil-X



BotaniGard-ES

Conclusions – Dip Treatments

- Dip treatment with BotaniGard-ES and Suffoil-X dislodges and kills 80-100% of the L2 larvae
- Plants should not have thrips damage when dipped into oils
- Powder formulations are less phytotoxic than oil formulations

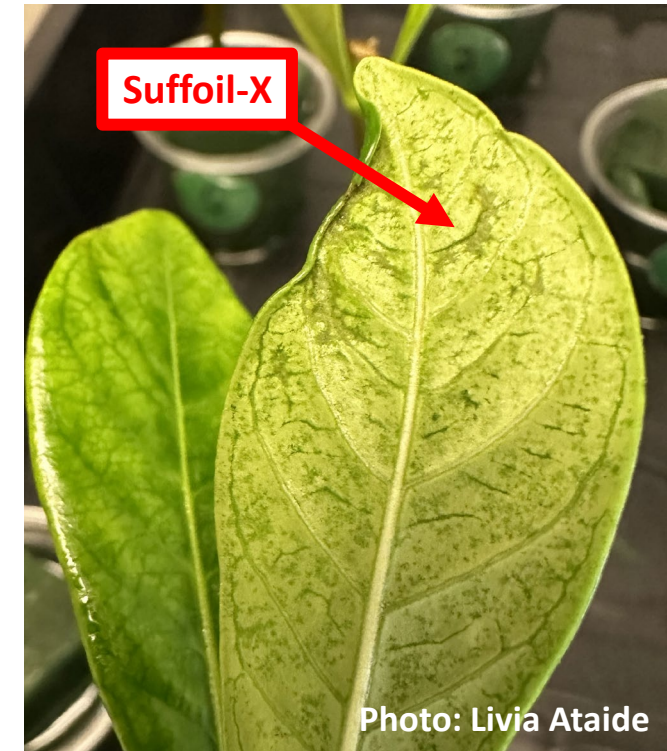


Photo: Livia Ataide

Take-home Messages

- Dip treatments allow for production of “clean” cuttings
- Larvae are likely to be the most affected stage
- Dips should not be considered a standalone solution or "silver bullet"
- IPM of *T. parvispinus* requires a multifaceted approach

Resources

TROPICAL RESEARCH & EDUCATION CENTER

Thrips parvispinus



[THRIPS PARVISPINUS RESOURCES](#)

[MORE INFORMATION](#)



Thank You!

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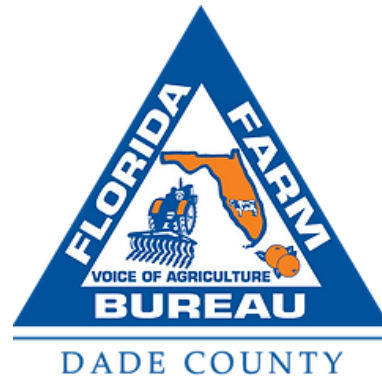
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BASf
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