

# EFFICACY OF TWO SPRAYING STRATEGIES FOR ASIAN CITRUS PSYLLID MANAGEMENT USING FUNGAL BIOPESTICIDES

Pasco Avery, Emily Duren, Robert Adair, Matt Adair, Jr. and Ron Cave

Entomopathogenic Fungi Research Laboratory, IRREC



VS



# Entomopathogenic Fungi

- Most are compatible with beneficial arthropods
- Some are compatible with agrochemicals
- Many can cause epizootics and suppress invasive pests
- Many are being applied as registered bioinsecticides worldwide

# ***Isaria fumosorosea***

- Endemic in Florida
- Compatible with beneficials – including *Tamarixia radiata* and lady beetles
- Broad spectrum potential for managing citrus pests
- Applied or being tested against Asian citrus psyllid (ACP) in FL, TX, CA, Mexico, and Brazil
- Applied against the potato psyllid and mites in WA, OR, CO, NE, and CA
- PFR-97 20% WDG contains *I. fumosorosea* blastospores



# Asian Citrus Psyllid Stages and Other Citrus Pests Susceptible to Infection by *Isaria fumosorosea*



# EFFICACY OF TWO SPRAYING STRATEGIES

## Rears Air Blast Sprayer



VS

## Proptec P-600 (ULV) Sprayer



Sprayer	Treatments	Rate/Acre	Trees	Rootstock	Plant date
UTC	UTC	N/A	Minn Tangelo	Kinkoji	10/8/2009
Proptec (ULV)	PFR-97 + JMS Oil	2 lbs + 1% v/v	Minn Tangelo	Kinkoji	10/8/2009
Rears Air Blast	PFR-97 + JMS Oil	2 lbs.+ 1% v/v	Minn Tangelo	Kinkoji	10/8/2009



# Determining Spore Deposition on Leaves Using Plastic Coverslips

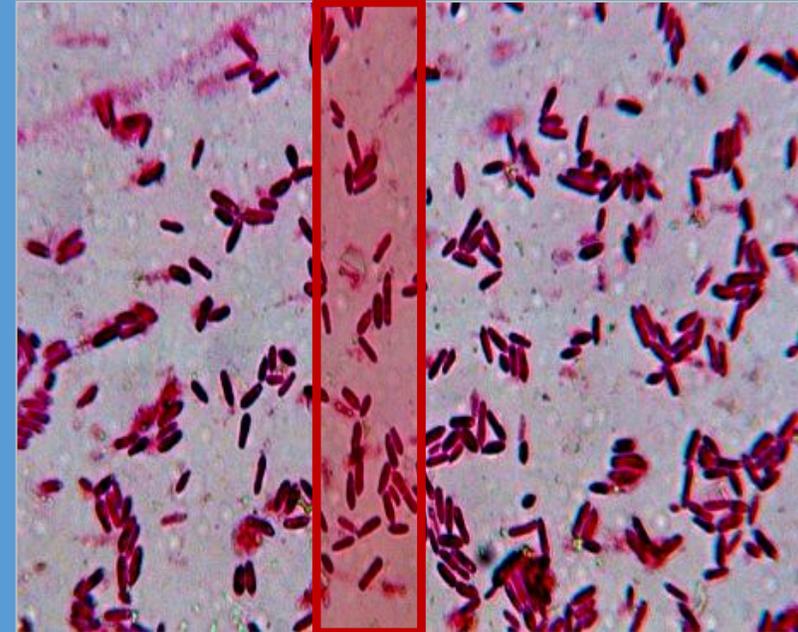
Top of leaf



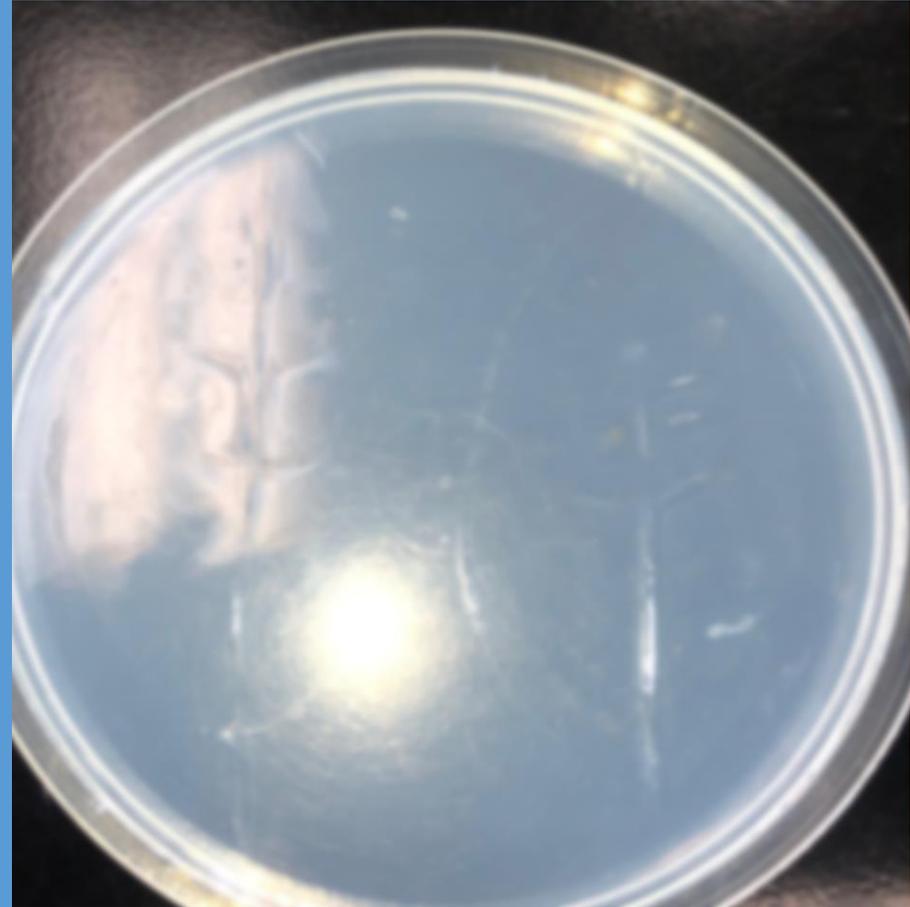
Bottom of leaf



Counting Stained Spores



# Leaf Imprint Technique



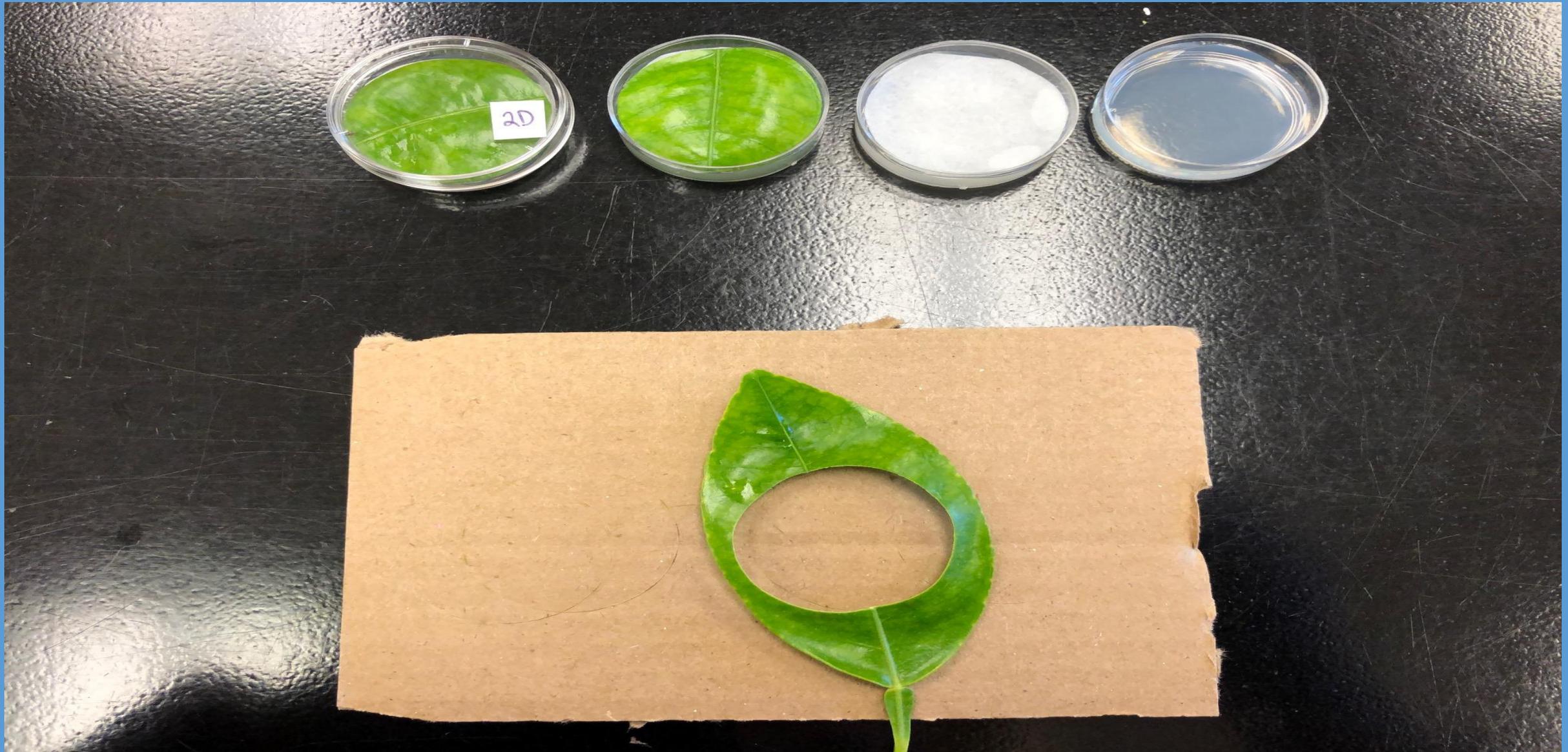
# Leaf Imprints of 1 DAT Field-Aged Leaves

Air Blast Sprayer

Proptec (ULV) Sprayer



# Preparation of Leaf Disk Bioassay – Sprayed Field-Aged Leaves



# **Mycosed ACP Adults on 7 DAT Field Aged-Leaves**

**Airblast Sprayer**

**Prop Tec ULV Sprayer**



# Comparison of Variables for Air Blast vs Prop Tec (ULV) Sprayers

Variables	Air Blast	ULV
Average Spore Deposit – topside (mm <sup>2</sup> )	783	680
Average Spore Deposit - underside (mm <sup>2</sup> )	930	224
ACP Mortality - 1 DAT	80%	30%
ACP Mortality - 7 DAT	20%	30%
ACP Mortality - 14 DAT	30%	20%
ACP Mortality - 21 DAT	30%	20%
Gallons of Spray / Acre	139	10
Application Cost / Acre <sup>a</sup>	\$27.50	\$8.00

<sup>a</sup>[https://crec.ifas.ufl.edu/media/crecifasufledu/economics/2018\\_19\\_Caretaker\\_Rates\\_20190816.pdf](https://crec.ifas.ufl.edu/media/crecifasufledu/economics/2018_19_Caretaker_Rates_20190816.pdf)

<b>DAT</b>	<b>Temperature (°F)</b>		<b>Humidity (%)</b>		<b>Rainfall (in)</b>
<b>7</b>	<b>83.8-43.7</b>	<b>63.9</b>	<b>99-54%</b>	<b>89%</b>	<b>0.02</b>
<b>14</b>	<b>84.6-38.5</b>	<b>58.4</b>	<b>99-42%</b>	<b>85%</b>	<b>0.00</b>
<b>21</b>	<b>85.6-48.2</b>	<b>69.6</b>	<b>99-62%</b>	<b>94%</b>	<b>0.73</b>

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A green tractor is pulling a red trailer in a field. The tractor has a large rear window and two orange lights on the sides. The trailer has a red and yellow triangular warning sign in the center. The background is a lush green field with trees in the distance under a cloudy sky.

**?? Questions ??**

**[pbavery@ufl.edu](mailto:pbavery@ufl.edu)**

**772-577-7335**