

Whiteflies



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Ficus

Whitefly

- **Feeds only on ficus**
- **Leaf yellowing**
- **Leaf drop**
- **Dieback**

Ficus Whitefly

Singhiella simplex (Hemiptera: Aleyrodidae)

- Only feeds on ficus species





Ficus Whitefly Update

- Some whitefly stages difficult to see
- Damage is most obvious in late summer and fall
- Typically populations go down in the winter
- Since last year, this whitefly appears to be worse
- Ongoing issues with ficus recovery



Ficus Whitefly

- Only feeds on ficus
- Causes leaf yellowing, leaf drop and branch dieback



Ficus Whitefly - Damage

- Causes leaf yellowing
- Leaf drop (severe)
- Branch dieback (highly variable)







Adult Whitefly
(2-4 days)



Eggs
(10 days)



4th instar – puparia
(5.8 days)

Ficus Whitefly Life Cycle

Constant temperature (80° F)



2nd-3rd instars – nymphs

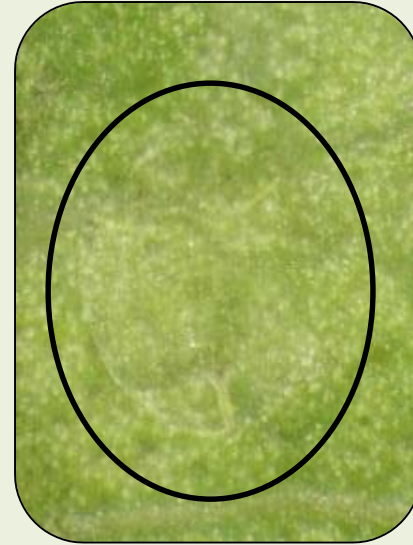
2nd instar – 3.7 days; 3rd instar – 3.3 days

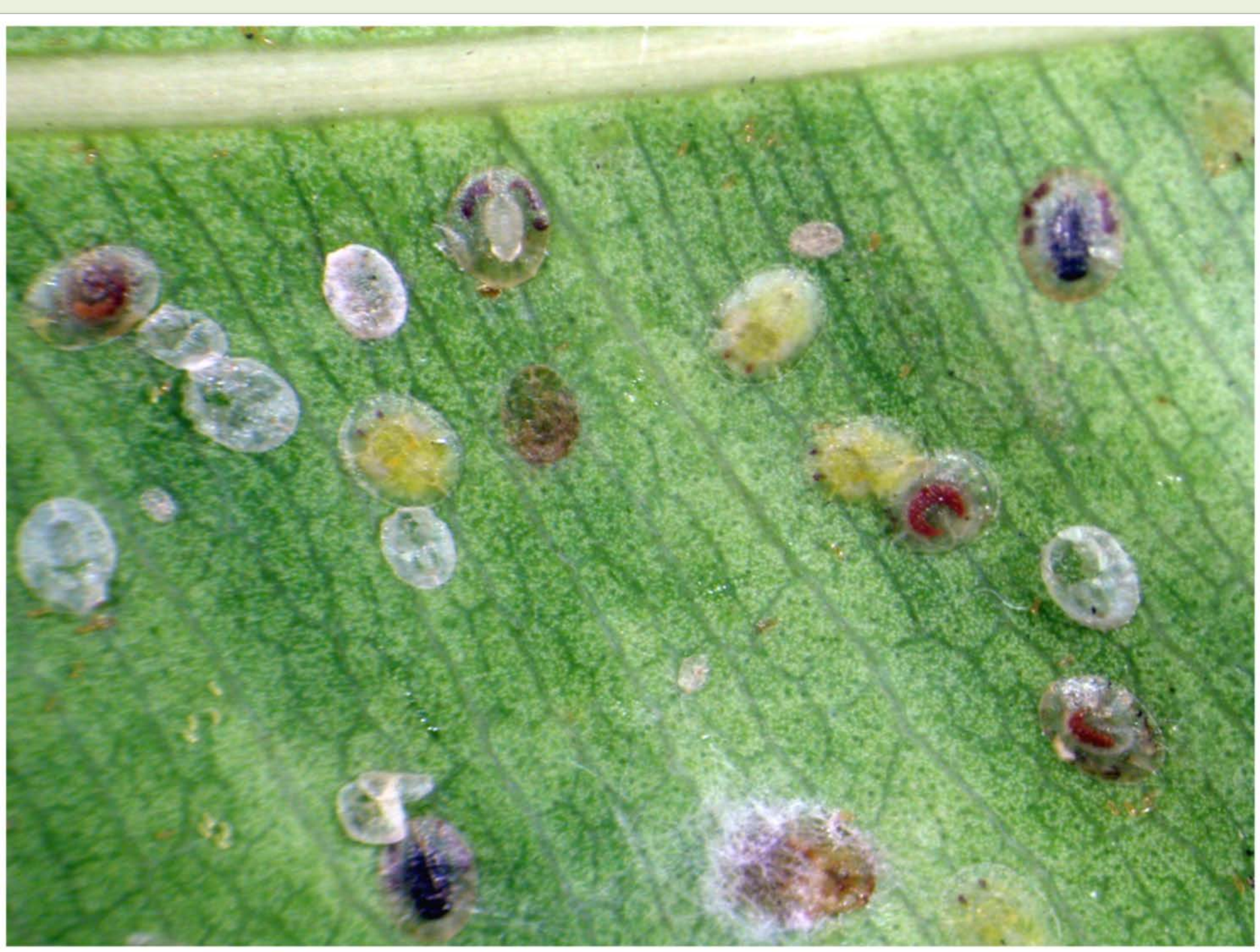


1st instar – crawler
(4.2 days)

Ficus Whitefly Immature Stages

- The immature stages (typically found on the underside of leaves) tend to be flat, oval and can vary in color or transparent
- The pupal case is often one of the most visible stages





Natural Enemies Observed in the Landscape

- *Harmonia axyridis*



- *Olla v-nigrum*



- *Exochomus
childreni*



- *Chilocorus nigritis*



- *Curinus coeruleus*



- *Encarsia
protransvena*



- *Amitus bennetti*



Natural Enemies Observed in the Landscape

- *Encarsia protransvena*



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- *Olla v-nigrum*
- *Exochomus childreni*
- *Chilocorus nigritis*
- *Curinus coeruleus*



Ficus Hosts

Previously Reported (other countries)

- *F. benjamina*
- *F. microcarpa*
- *F. aurea*
- *F. altissima*
- *F. bengalensis*
- *F. maclellandii*



Tested (Florida)

- *F. benjamina*
- *F. microcarpa*
- *F. aurea* (native)
- *F. citrifolia* (native)
- *F. binnendijkii* “Alii”

Ficus Hosts

Not Susceptible to the Whitefly

- *F. microcarpa* “Green Island”
- *F. religiosa*
- *F. carica* (edible fig)
- *F. lyrata*
- *F. pumila* (= *F. repens*)
- *F. elastica* “Burgundy”



Damage rating (Average $\pm$ SE) every 2 weeks

Site	Oct 22	Nov 7	Nov 20	Dec 4	Dec 18	Jan 3	Jan 22	Feb 1	Feb 14
1	5.0	5.0	4.7	3.7	3.3	2.3	2.0	1.3	1.0
3	5.0	5.0	4.0	3.5	3.0	2.0	1.5	1.5	1.5
5	5.0	5.0	3.5	0.6	2.0	1.0	0.5	terminated	terminated
7	5.0	5.0	5.0	4.5	4.5	4.0	3.5	3.0	2.5



0 (no leaves)



1 (1 -20%)



2 (21 -40%)



3 (41- 60%)



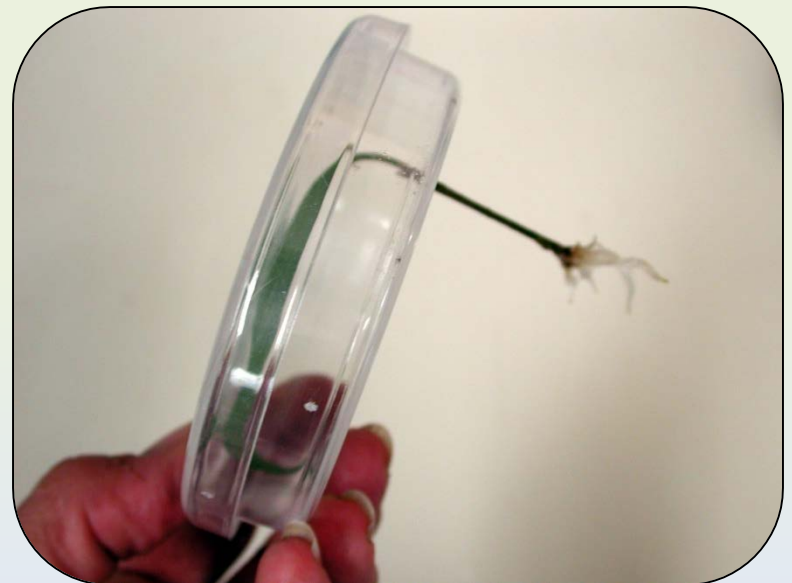
4 (61- 80%)



5 (81 – 100%)

Laboratory Bioassay

Standard petri plate with a small hole placed on a container of water; cutting or leaf placed in the plate with the stem or root placed in the hole





Adult Whitefly
(2-4 days)



Eggs
(10 days)



4th instar – puparia
(5.8 days)

Ficus Whitefly Life Cycle

Constant temperature (80° F)

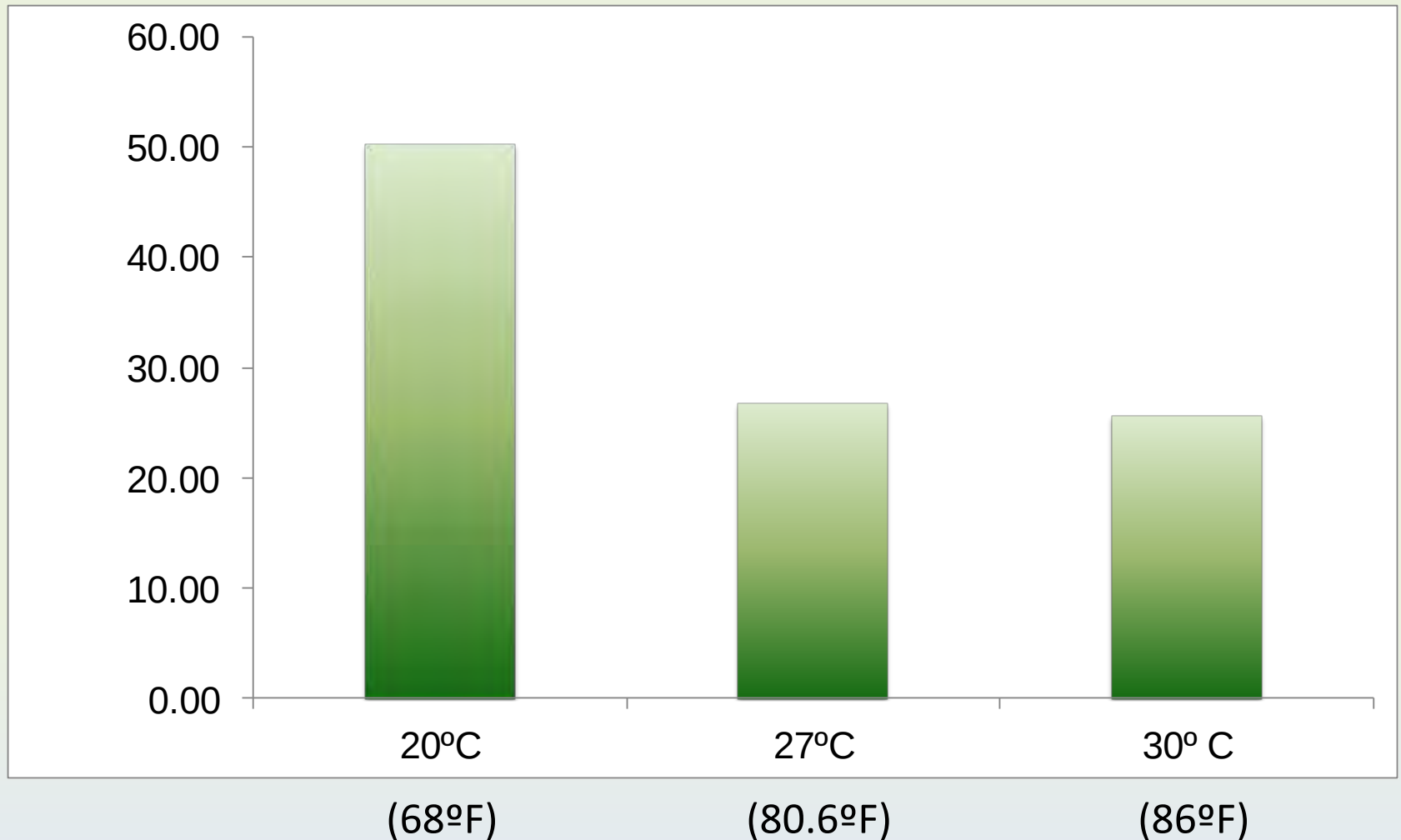


2nd-3rd instars – nymphs
2nd instar – 3.7 days; 3rd instar – 3.3 days

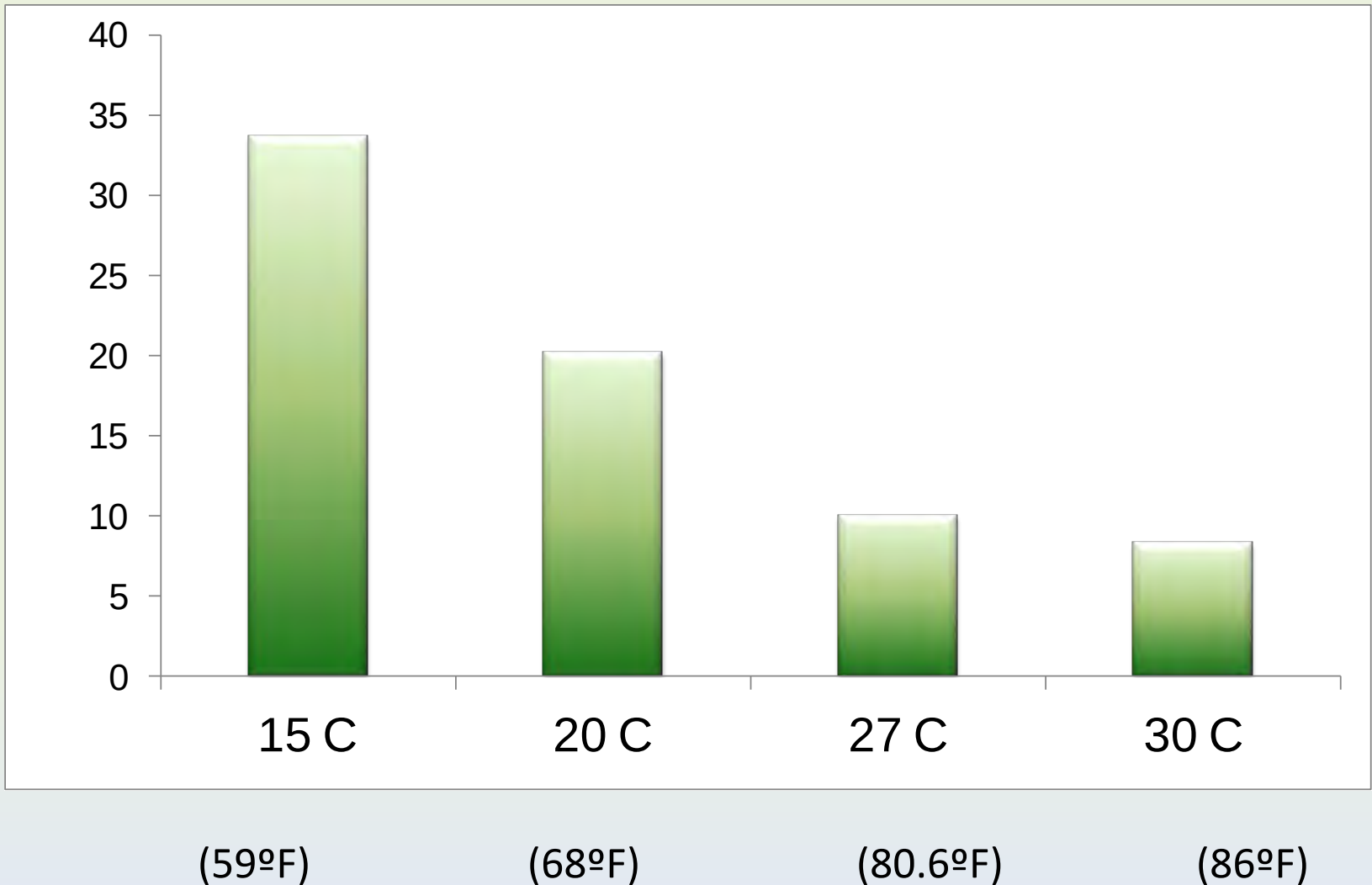


1st instar – crawler
(4.2 days)

Effect of Temperature on Length of Life Cycle



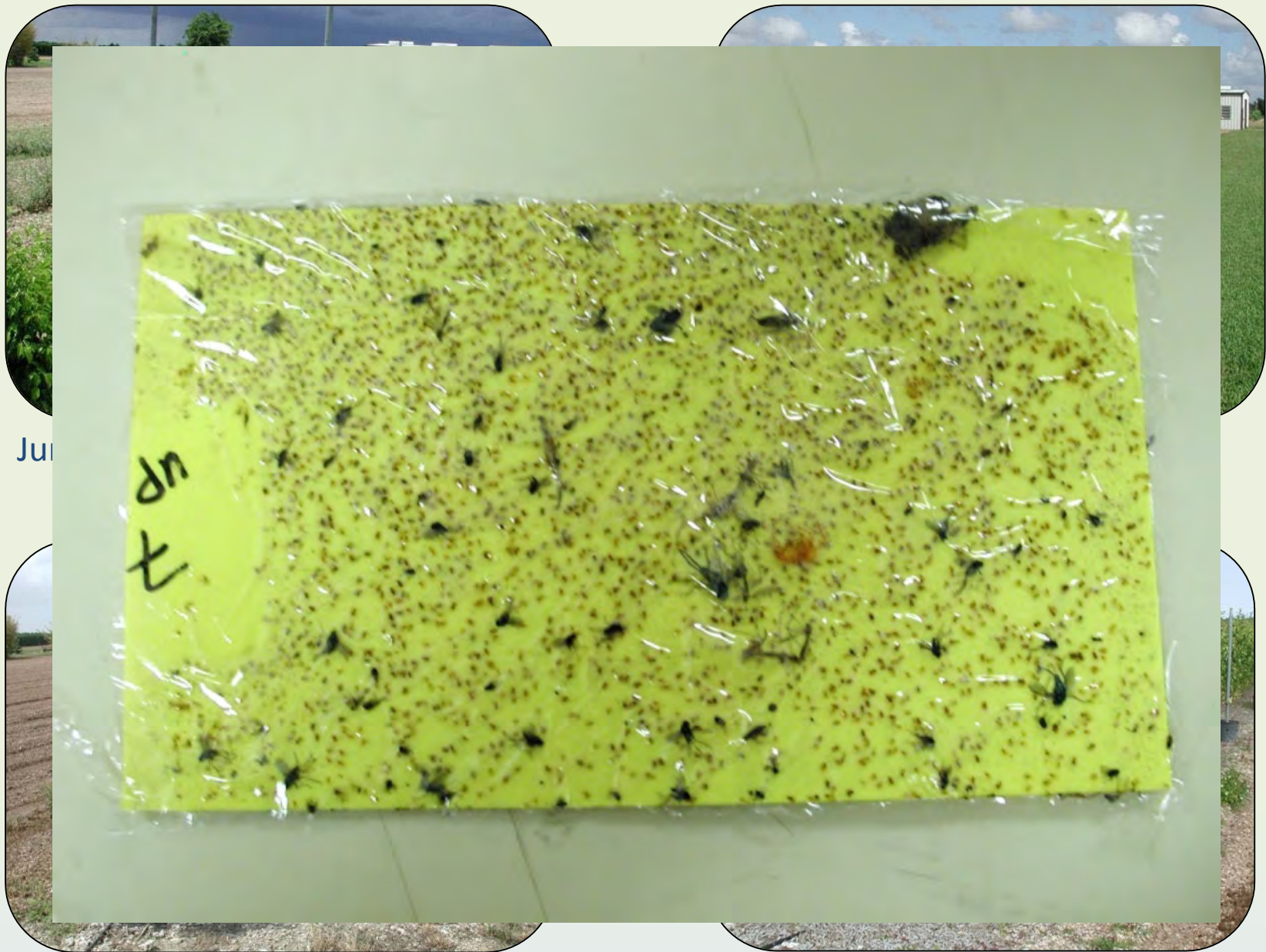
Effect of Temperature on Egg Hatch



Ficus Whitefly Trapping



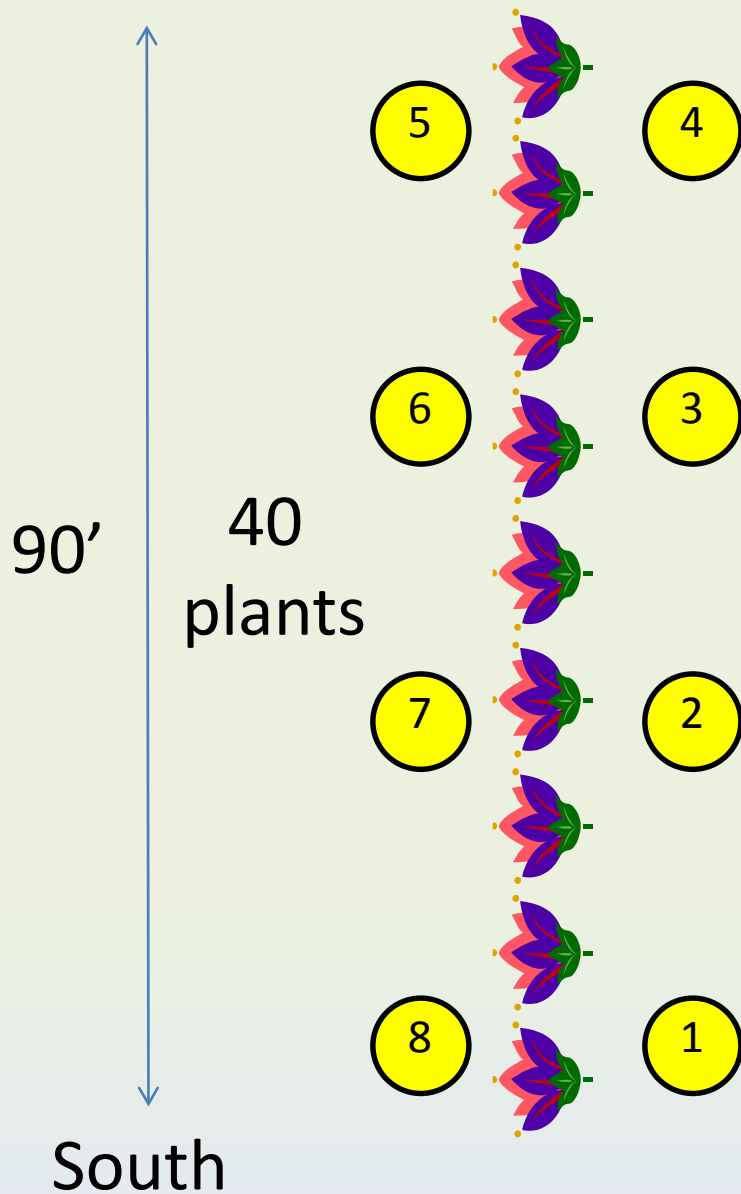
- *Ficus benjamina*
- Isolated area
- Sticky traps for adult whiteflies
- Defoliation



August – approx. 600/trap

December – approx. 800/trap

North



Ficus Whitefly Adult Flight Study (March 2009 – 2013)



June 2009



June 2010



June 2011



June 2012



November 2009



November 2010



November 2011



November 2012



East

4

3

2

1



5

6

7

8

West

2

East

1



7

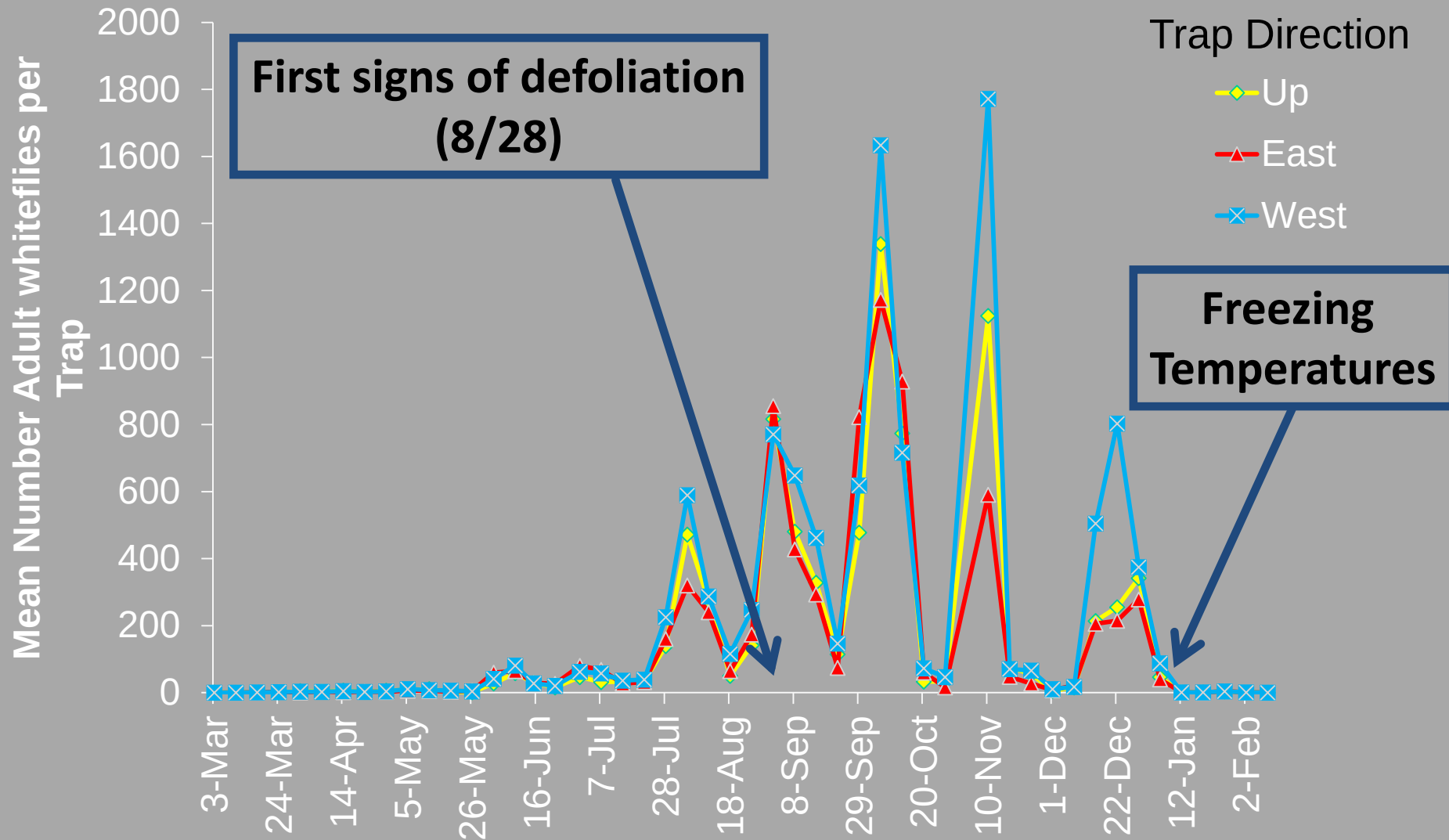
West



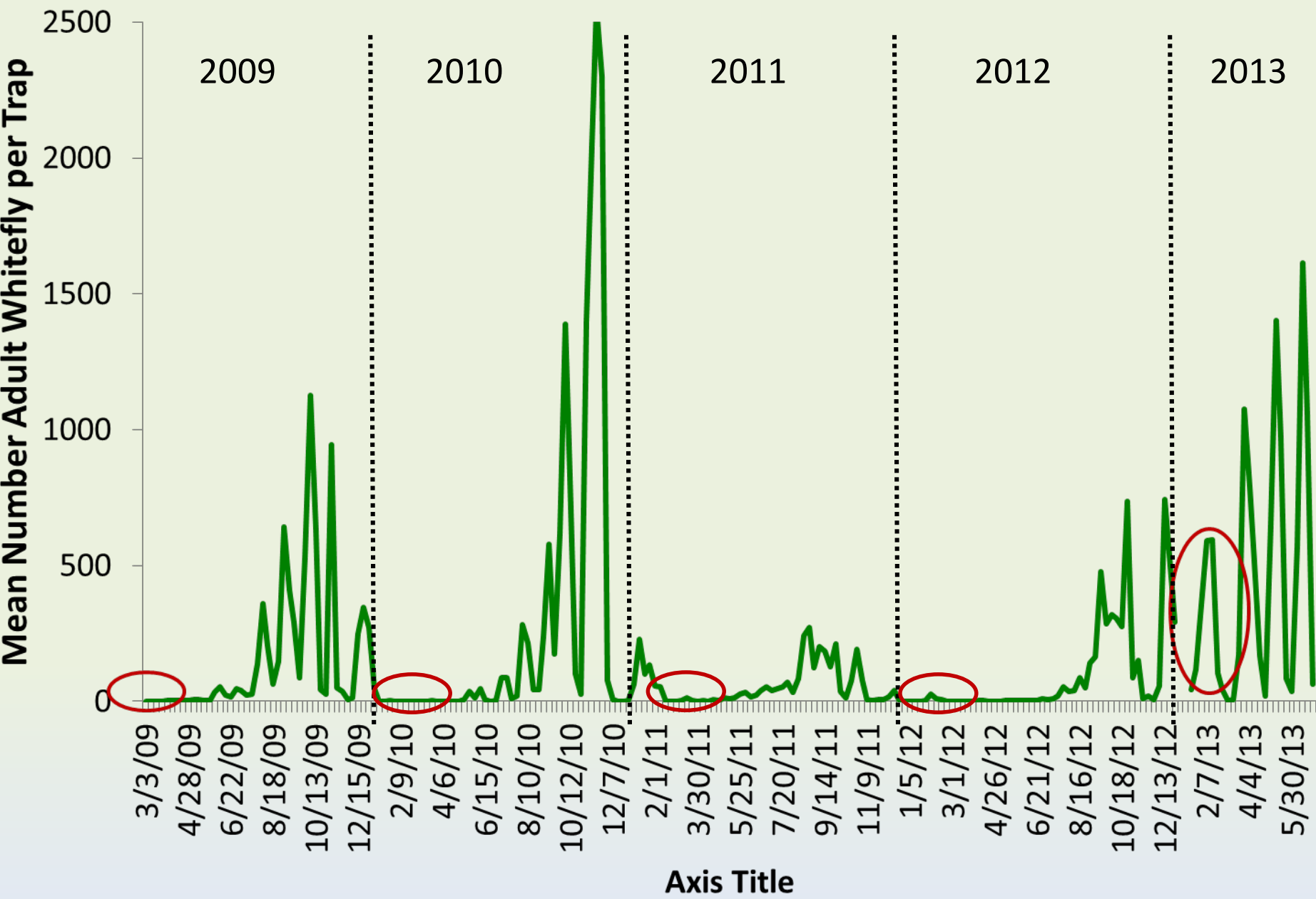
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Ficus Whitefly

Mean Trap Catch



Ficus Whitefly 2009-2013

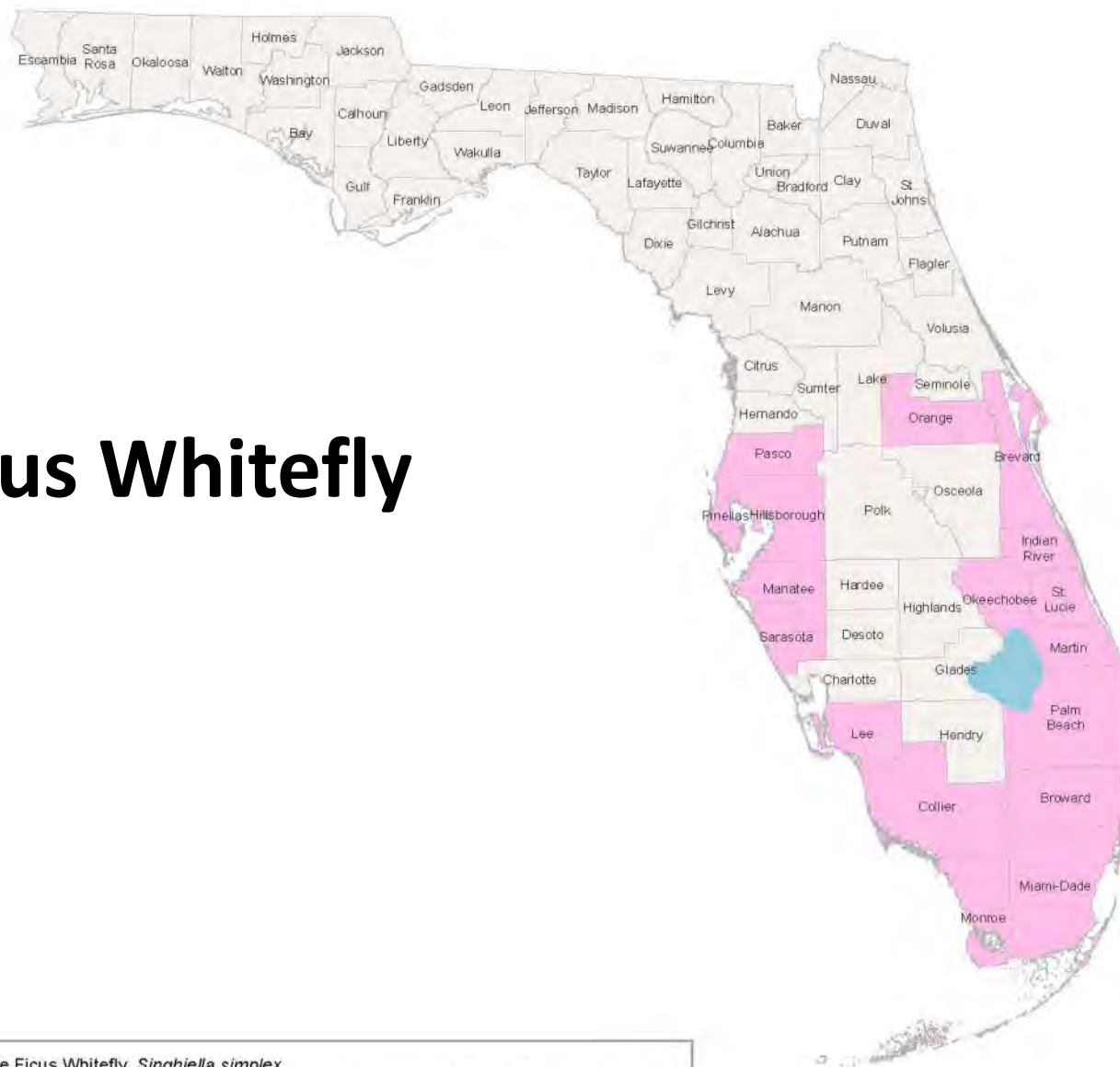


Percent Defoliation

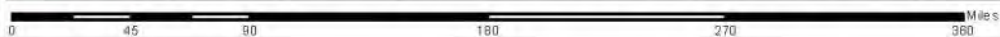




Ficus Whitefly



 Distribution by county of the Ficus Whitefly, *Singhiella simplex* confirmed by Florida Department of Agriculture and Consumer Services, Division of Plant Industry (FDACS-DPI)

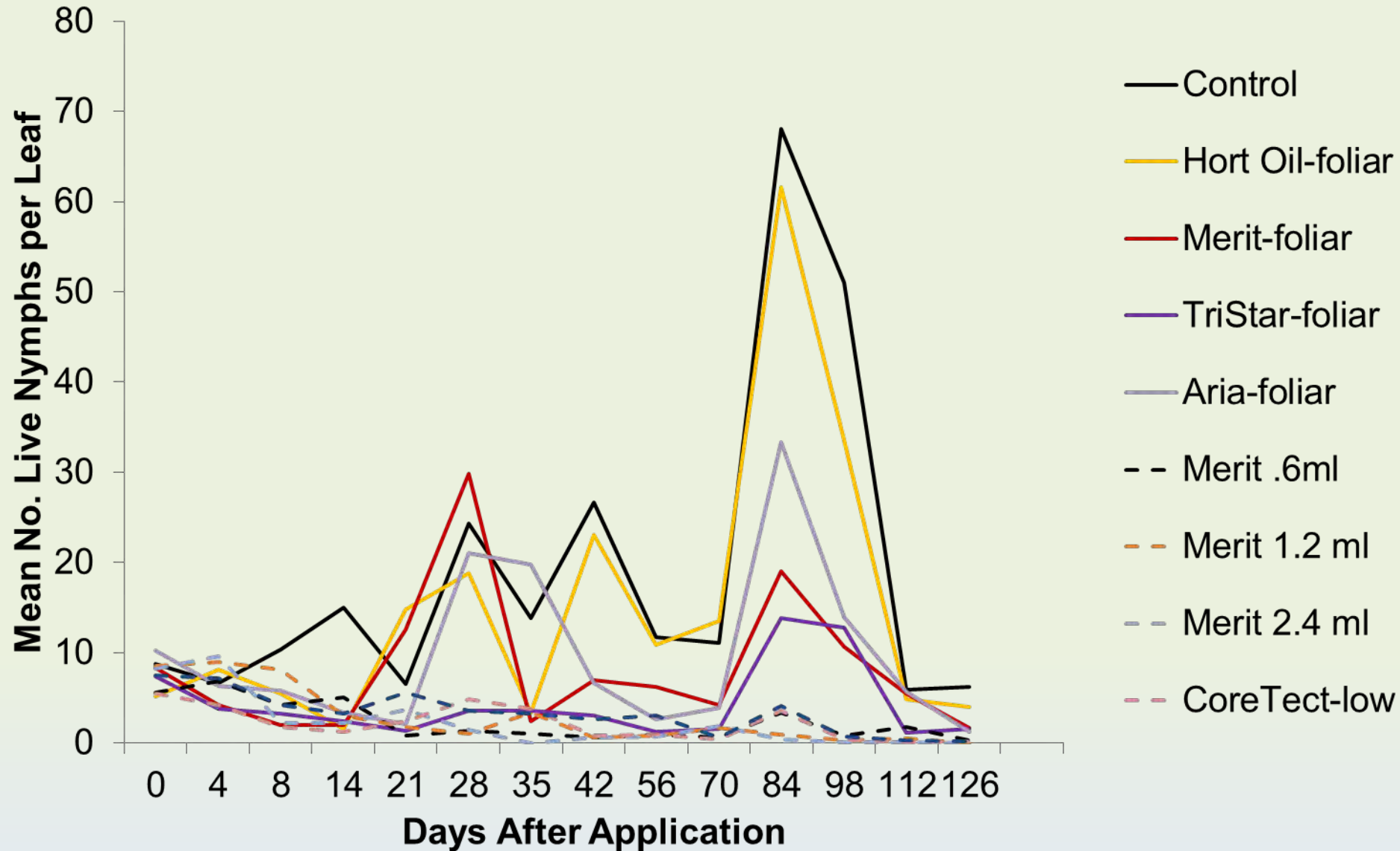


Management with Insecticides

- Systemic versus contact
- Neonicotinoid insecticides
- Length of control
- 3-gal container;
F. benjamina
- Infested shade house



Soil and Foliar Application of Insecticides



Pest Problems on Ficus

- 2003 – Ficus thrips
- 2003 – Leaf gall wasp
- 2007 – Ficus whitefly
- 2007 – Fig wax scale outbreaks
- 2008 – Gall midge
- 2011 – Bondar's nesting whitefly
- Others (Lobate lac scale; Croton scale)

