

New Invasive Insects

What are they and what to do about them

Earth-Kind Short Course



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TEXAS A&M
AGRI LIFE
EXTENSION

Crapemyrtle bark scale



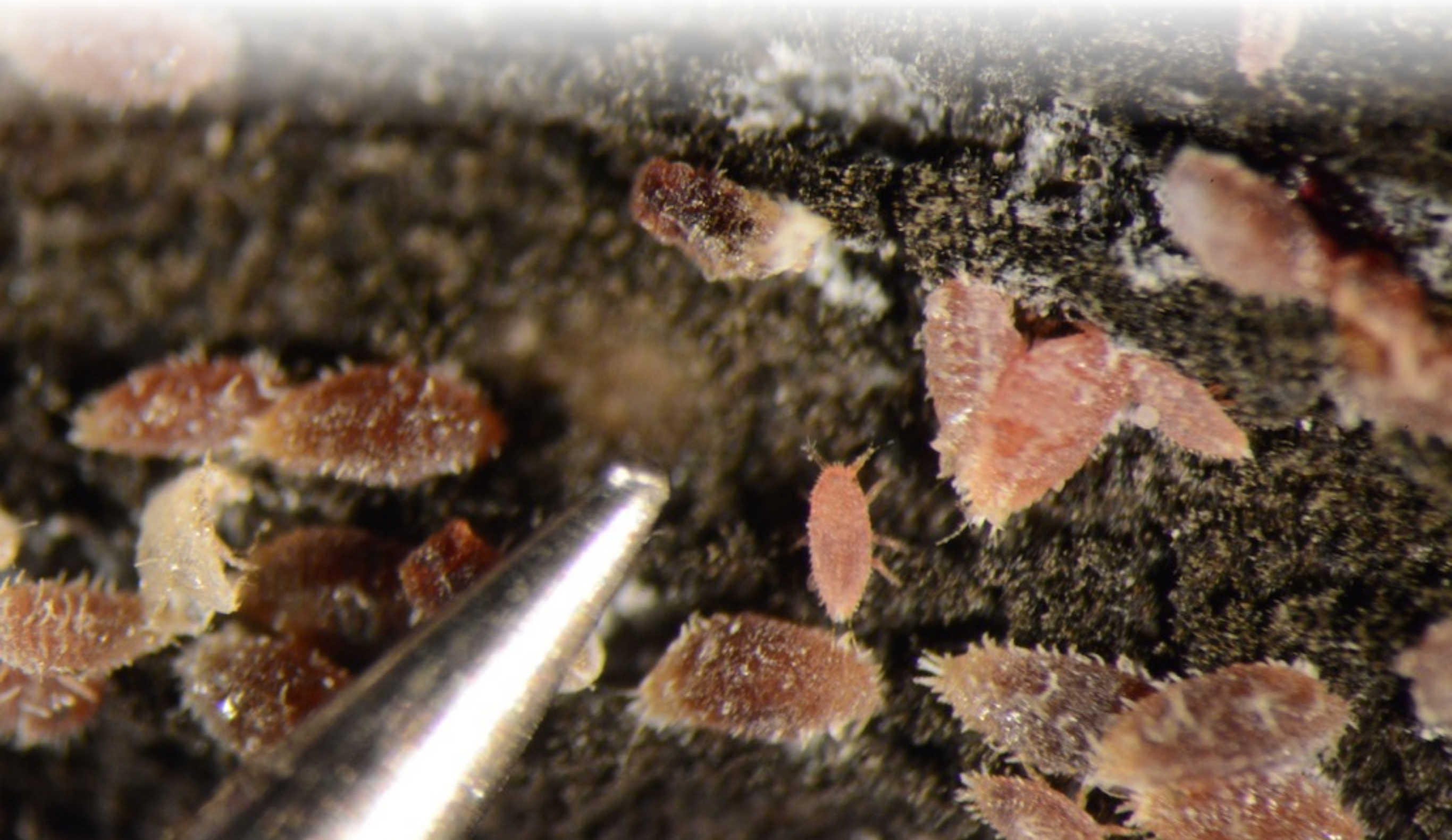
North Amer. First sighting:
2004, Northern Texas

Now found in:
TX, LA, AR, TN, OK

Originally from:
Asia

[*Eriococcus lagerstroemiae*
(Hemiptera: Eriococcidae)]

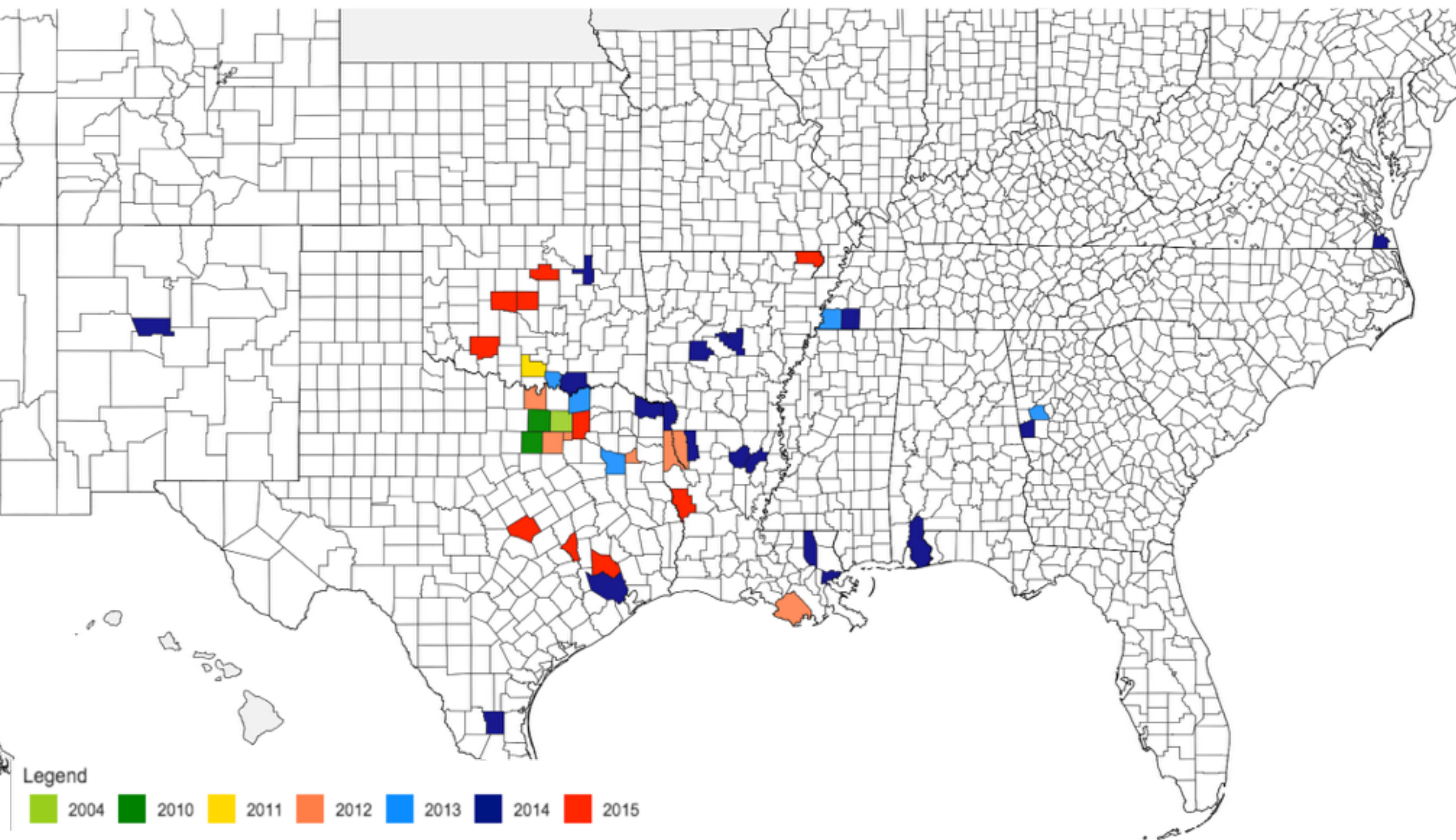
Crapemyrtle bark scale



Crapemyrtle bark scale



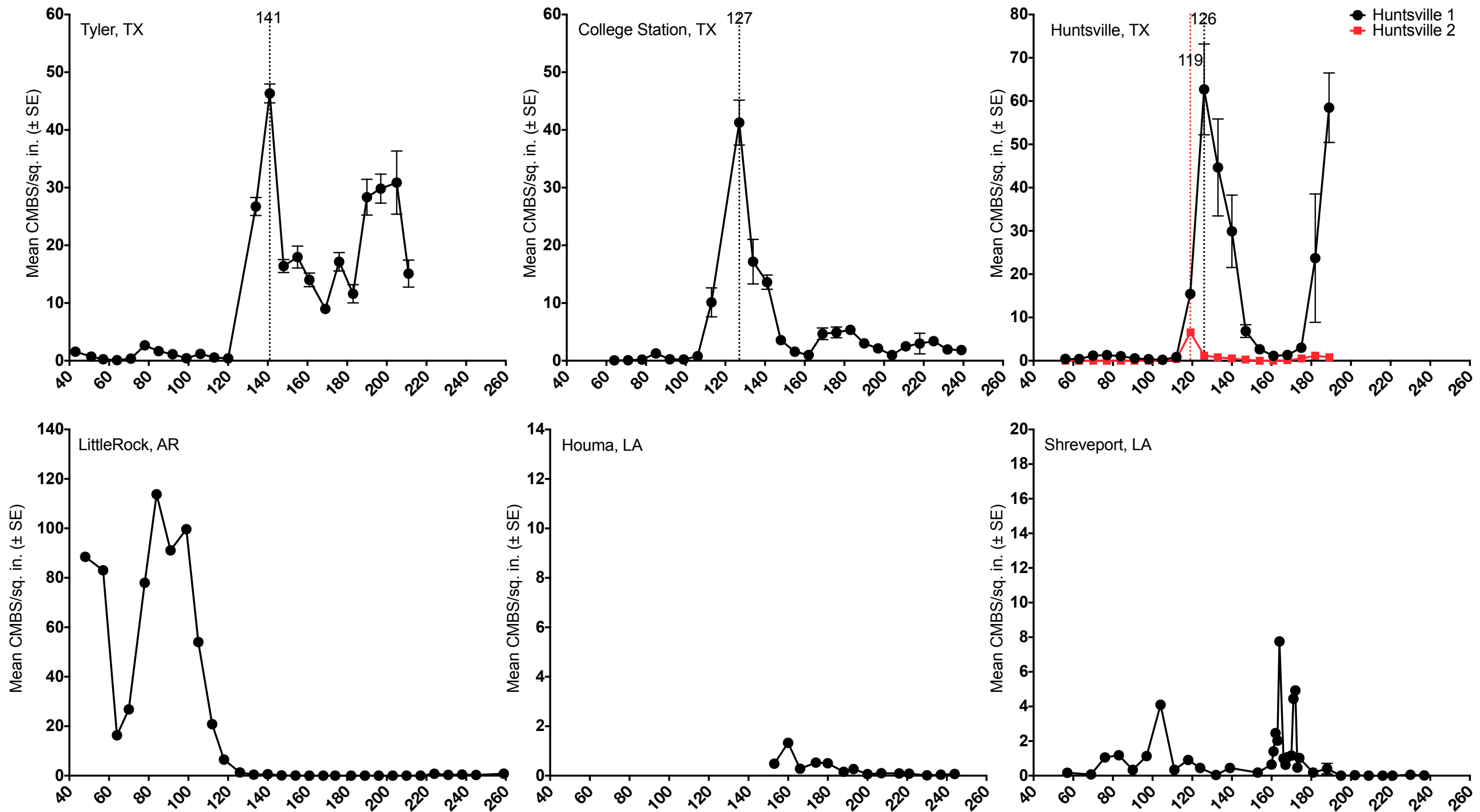
Crapeyrrtle bark scale



Crapemyrtle bark scale

Population Dynamics

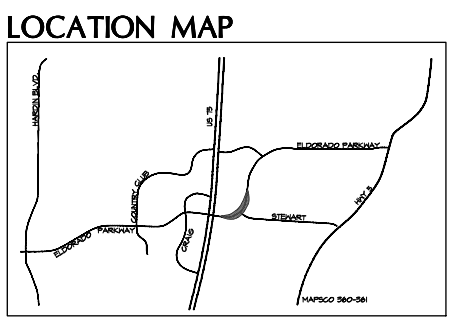
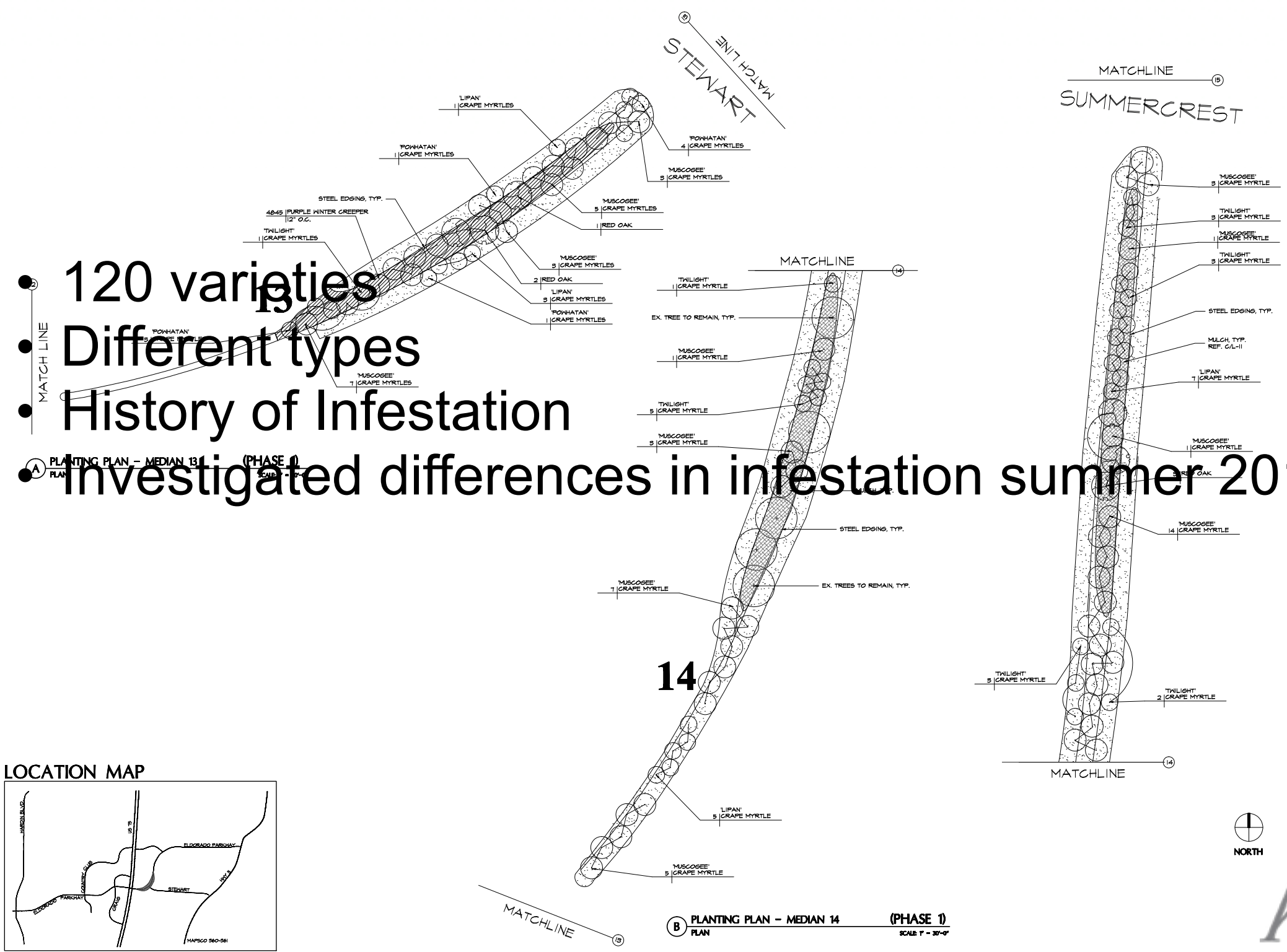
- Appear to have multiple peaks within a season



Crapemyrtle bark scale | McKinney Trails

- 120 varieties
- Different types
- History of Infestation

Investigated differences in infestation summer 2014



njb
Newman, Jackson, Bieberstein
Landscape Architecture
Banner Plaza North
12770 Oak Road, Suite 210
Dallas, Texas 75244
Tel: 972-255-0553
Fax: 972-255-0552
njb@njblandscape.com

PRELIMINARY
NOT FOR
CONSTRUCTION

Mc Kinney Crapemyrtle Trails
City of Mc Kinney
P.O. Box 517
Mc Kinney, Texas 75069

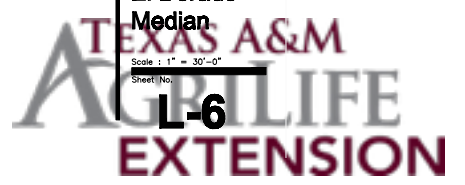
Revisions

No.	Date	Item

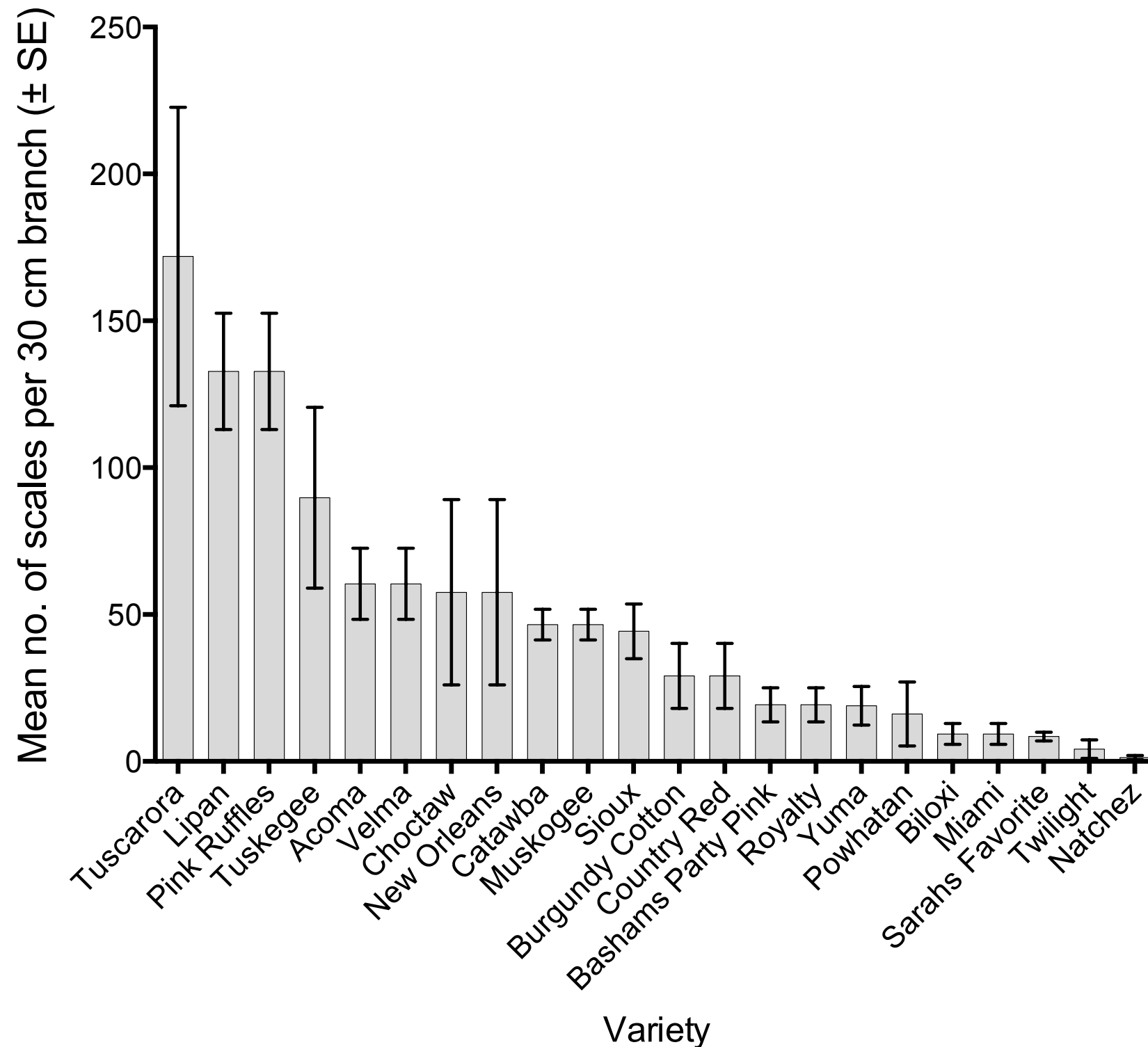
Date: 15 MAY 2000
Drawn: JdG
Checked: RJ
Project No.: 0012-99

Sheet Title
El Dorado
Median

Scale: 1" = 30'-0"
Sheet No.: L-6



Crapemyrtle bark scale | McKinney Trails



Crapemyrtle bark scale

Beneficials



Crapemyrtle bark scale

Beneficials



Crapemyrtle bark scale

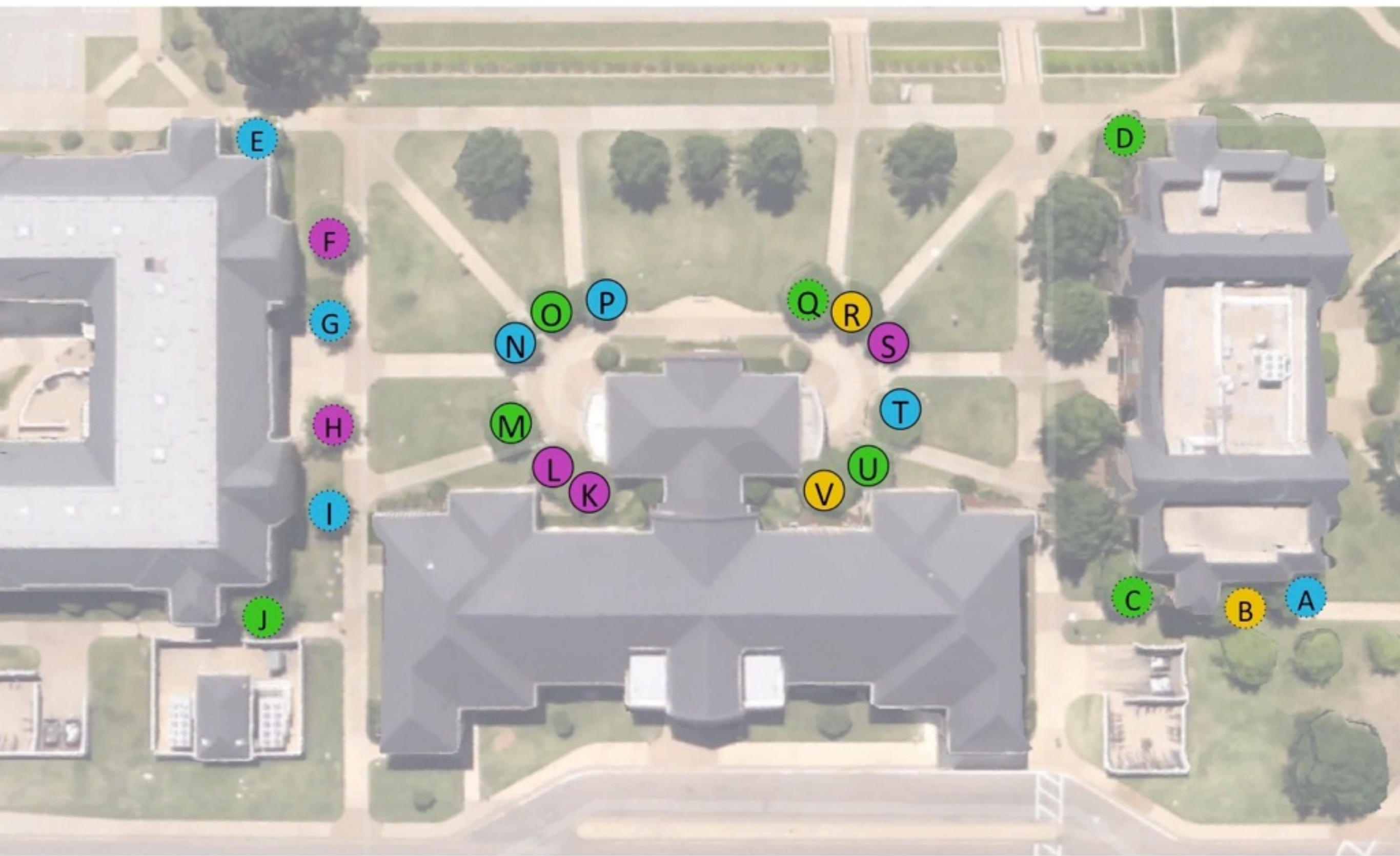
Beneficials





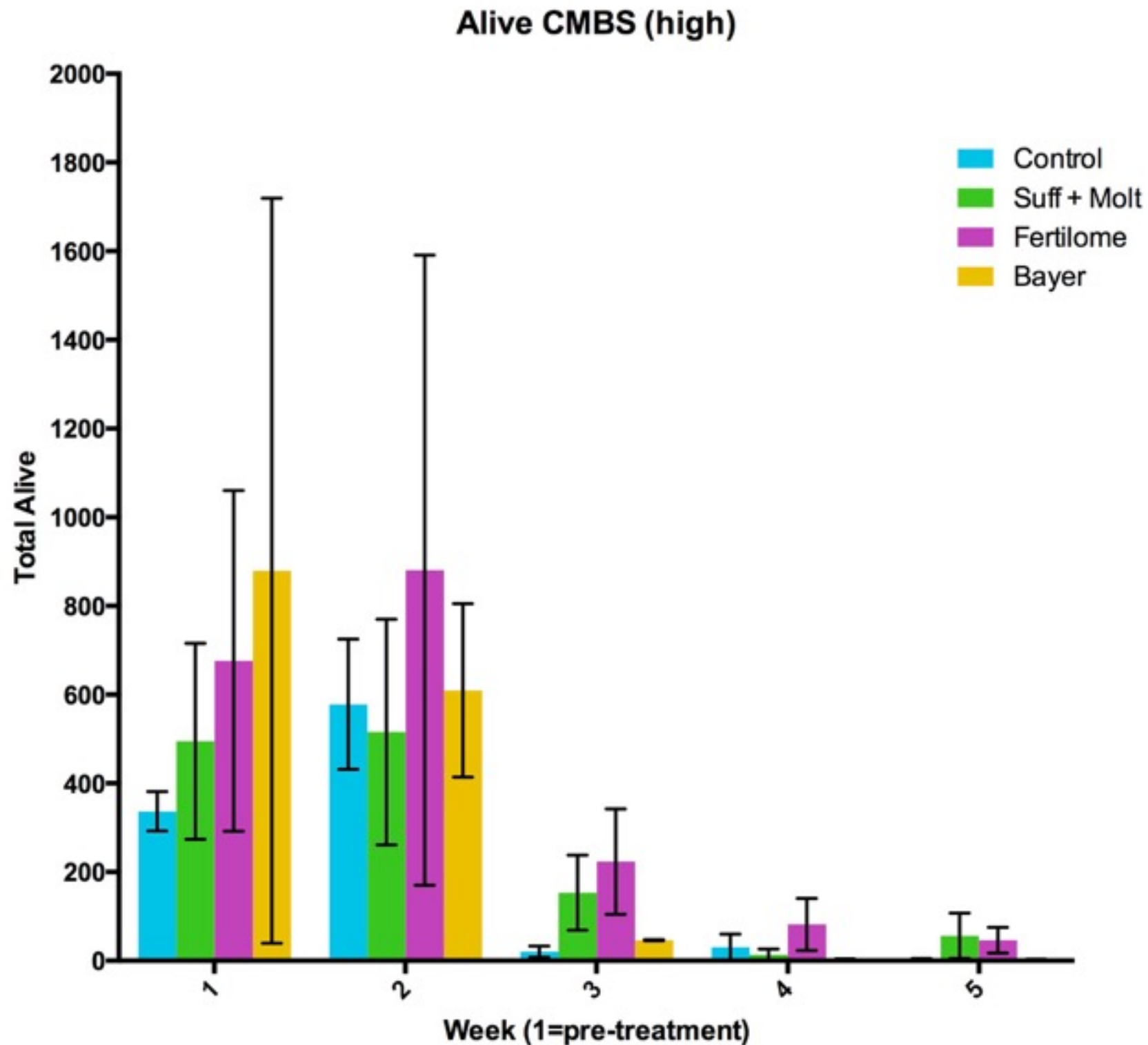
Infestation Severity:

Low | High



Site A Treatment:  Control  SuffOil + Molt-X  Fertilome  Bayer

Crapemyrtle bark scale



Crapemyrtle bark scale

Control

Horticultural oils have yet to demonstrate consistent efficacy against crapemyrtle bark scales.

Systemics showing most promise:

- Clothianidin, dinotefuran, imidacloprid and thiomethoxam.

Crapemyrtle bark scale

Dinotefuran

Control



Jim Robins, AUEX

Crapemyrtle bark scale

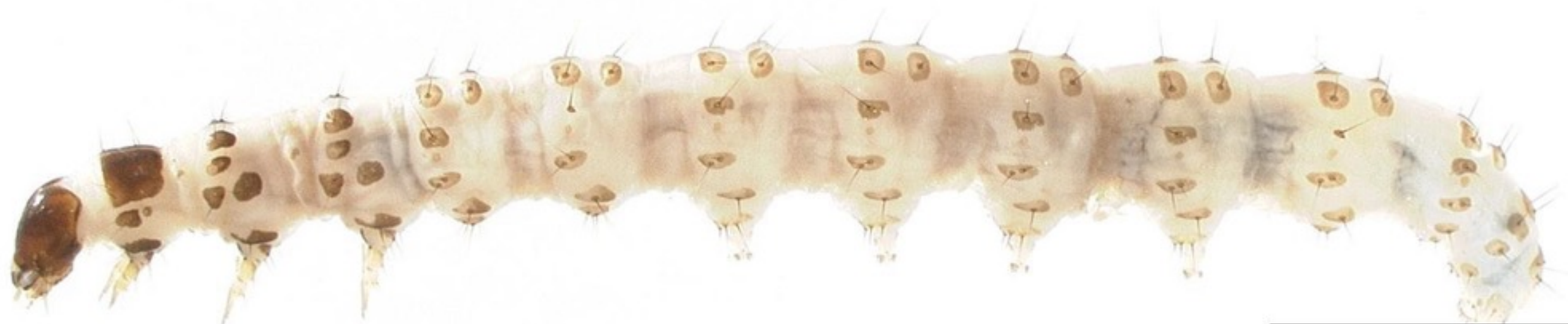


European Pepper Moth

Duponcheila fovealis

2004 and 2011 population
- San Diego County

Larva feed on leaves, can
girdle plant base and feed
on fruit.



5499614

European Pepper Moth

Hosts

> 70 hosts

Amaranthus

Bacopa lanigera

Beta vulgaris (beets) Coleus

Anemone

Begonia tuberosa

**Capsicum annuum
(pepper)**

Cucumis (cucumbers)

Annona

Begonia elatior

Chrysanthemum

Cyclamen

Anthurium

Bellis perennis
(English daisy)

Cineraria

**Euphorbia
pulcherrima
(poinsettia)**

European Pepper Moth

Hosts

> 70 hosts

eustoma grandiflorum (lisianthus)	Heuchera (coral bells)	Limonium (sea lavender)Lysimachia	Oxalis acetosella (common wood sorrel)
Ficusu triangularis (fig)	Impatiens	Malva sylvestris (mallow)	Pelargoniium (geranium)
Fragaria (strawberries)	Kalanchoe	Ocimum basilicum (basil)	Phalaenopsis (orchid)
Gerbera (African daisy)	Lactuca (lettuce)	Origanum majorana (majorum)	Pizza

European Pepper Moth

Hosts

> 70 hosts

Rhododendron (azalea)	Solanum lycopersicum (tomato)
-----------------------	--

Rosa (rose)	Thymus (thyme)
--------------------	----------------

Rubus fruticosus (blackberry)	Zea (corn)
--	------------

Senecio

European Pepper Moth



Female can lay
200 eggs
in her lifetime

Spend 4 - 9 days
as eggs

European Pepper Moth



3 - 4 weeks as larva

Burrow into stems
and fruit



Photo Cred: Marja van der Straten, Plant Protection Service, Wageningen

Photo Cred: Lyle Buss, University of Florida



European Pepper Moth



1 - 2 weeks

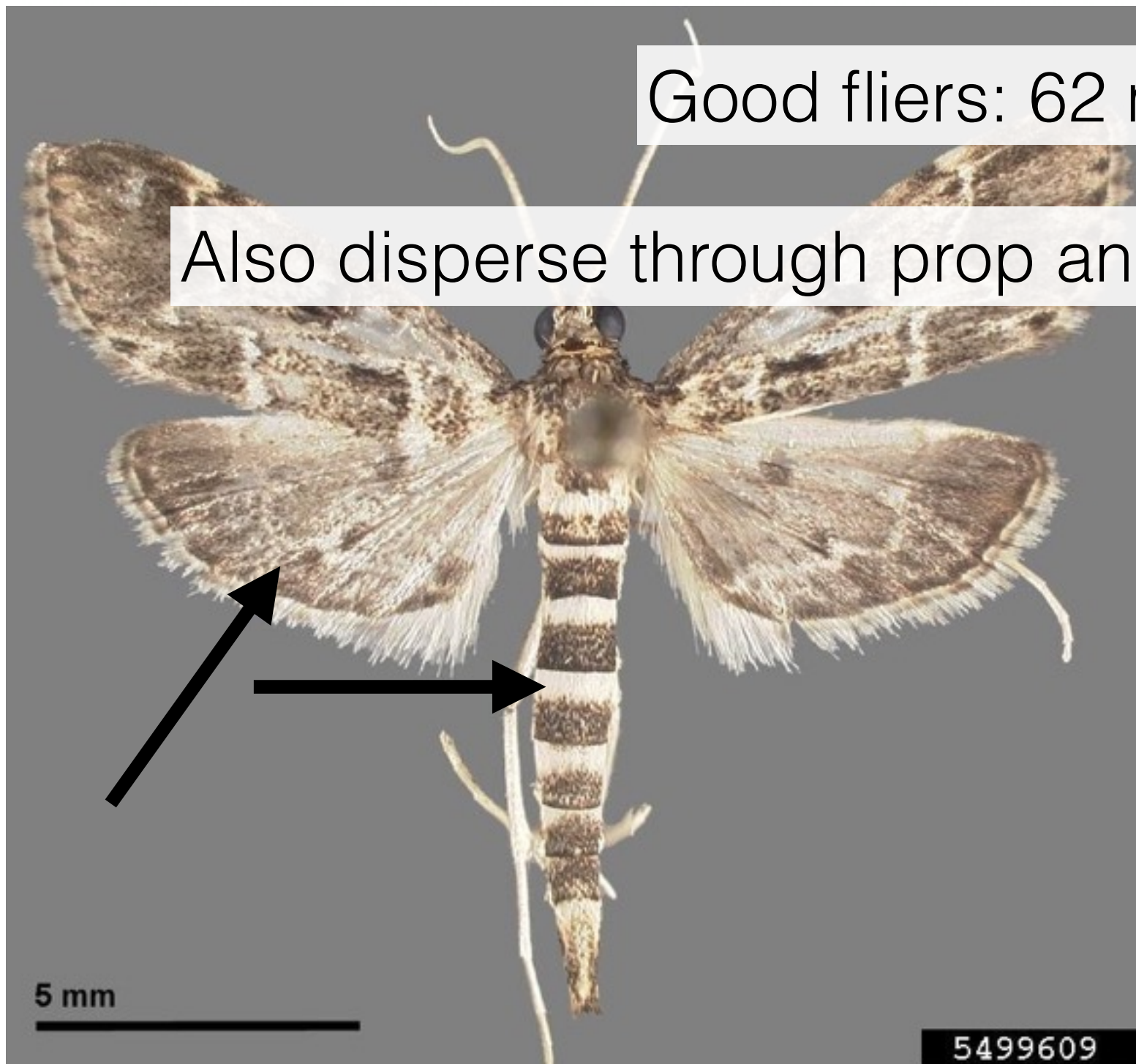


Photo Cred: James Hayden, Florida Department of Ag. and Cons. Services

European Pepper Moth

Good fliers: 62 miles

Also disperse through prop and non-prop material



European Pepper Moth

Development time per generation: 6 - 8 weeks

8 - 9 generations/year recorded in some greenhouses

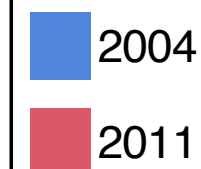
Hasn't shown to overwinter very well

Warming climate: high potential for multiple brooding

5 mm

5499609

Duponchelia Detection



European Pepper Moth

Control

Larval stage

Bt

Rove Beetle (*Dalotia coriaria*)

Beneficial nematodes

(*Heterorhabditis bacteriophora* and *Steinernema* spp.)



Photo Cred: [Entocare](#)



Photo Cred: [University of Minnesota](#)

European Pepper Moth

Control

Egg stage

Predatory mites

Rove Beetle

Parasitic Wasps



Photo Cred: [National Bureau of Agriculturally Important Insects](#)

Photo Cred: [mertens](#)

European Pepper Moth

Control

Remove weeds from growing areas

Clean growing area clean

Remove lower leaves and use drier growth medium

Insect nets

European Pepper Moth

Control

Spinosad, Bifenthrin, Fluvinate, Deltamethrin
Esfenvalerate, Orthene, and Lambda-cyhalothrin

Imidacloprid, Methomyl, Ethoprop, Acephate,
Emamectin, Permethrin, Chlorantraniprole, and
Azadirachtin.

European Pepper Moth

Control

Targeted

Contact for before larvae bore into stems
Systemic for after larvae bore into stems

Brown Marmorated Stink Bug

Halyomorpha halys



UGA1460048

Brown Marmorated Stink Bug

Halyomorpha halys

Late 1990's: First introduced to North America (Pennsylvania)
 2001: First identified (Rick Hoebeke)
 2004: Widely identified in farms and forests
 2010: Catastrophic damage in most mid-Atlantic states (sweet corn, peppers, tomatoes, apples and peaches).
 2011: Continues to be present and cause damage

Brown Marmorated Stink Bug

Halyomorpha halys

Female can lay up to 486 eggs in her lifetime, often in clusters of about 28 eggs.

Can produce several broods in a year

Piercing mouth-parts

Not currently known to vector viruses in the US

Brown Marmorated Stink Bug



UM Extension

Photo Cred: UM Extension

Brown Marmorated Stink Bug



Photo Cred: UM Extension

Brown Marmorated Stink Bug



Photo Cred: Virginia Cooperative Extension

Brown Marmorated Stink Bug

Habitat*	Genus	Species	Common Name
Orn.	<i>Abelia</i>	<i>× grandiflora</i>	glossy abelia
Agric.	<i>Abelmoschus</i>	<i>esculentus</i>	okra
Orn.	<i>Acer</i>	<i>circinatum</i>	vine maple
Orn.	<i>Acer</i>	<i>japonicum</i>	Amur (Japanese Downy) maple
Orn.	<i>Acer</i>	<i>macrophyllum</i>	bigleaf maple
Orn.	<i>Acer</i>	<i>× tegmentosum</i>	Manchurian snakebark maple
Orn.	<i>Acer</i>	<i>griseum</i>	paperbark maple
Orn.	<i>Acer</i>	<i>negundo</i>	boxelder
Orn.	<i>Acer</i>	<i>palmatum</i>	Japanese maple
Orn.	<i>Acer</i>	<i>platanoides</i>	Norway maple
Orn.	<i>Acer</i>	<i>× freemanii</i>	Freeman maple
Orn.	<i>Acer</i>	<i>rubrum</i>	red maple
Orn./Wild	<i>Acer</i>	<i>saccharum</i>	sugar maple
Orn.	<i>Acer</i>	<i>saccharinum</i>	silver maple
Orn.	<i>Acer</i>	<i>pensylvanicum</i>	striped maple
Orn.	<i>Acer</i>	<i>campestre</i>	hedge maple
Orn.	<i>Aesculus</i>	<i>× carnea</i>	red horse-chestnut
Orn.	<i>Aesculus</i>	<i>glabra</i>	Ohio buckeye
Wild	<i>Ailanthus</i>	<i>altissima</i>	tree of heaven
Agric./Orn.	<i>Amaranthus</i>	<i>caudatus</i>	love-lies-bleeding (ornamental)
Orn.	<i>Amelanchier</i>	<i>laevis</i> (syn. <i>× grandiflora</i>)	Allegheny (apple) serviceberry

Data set: stopbmsb.org

Brown Marmorated Stink Bug

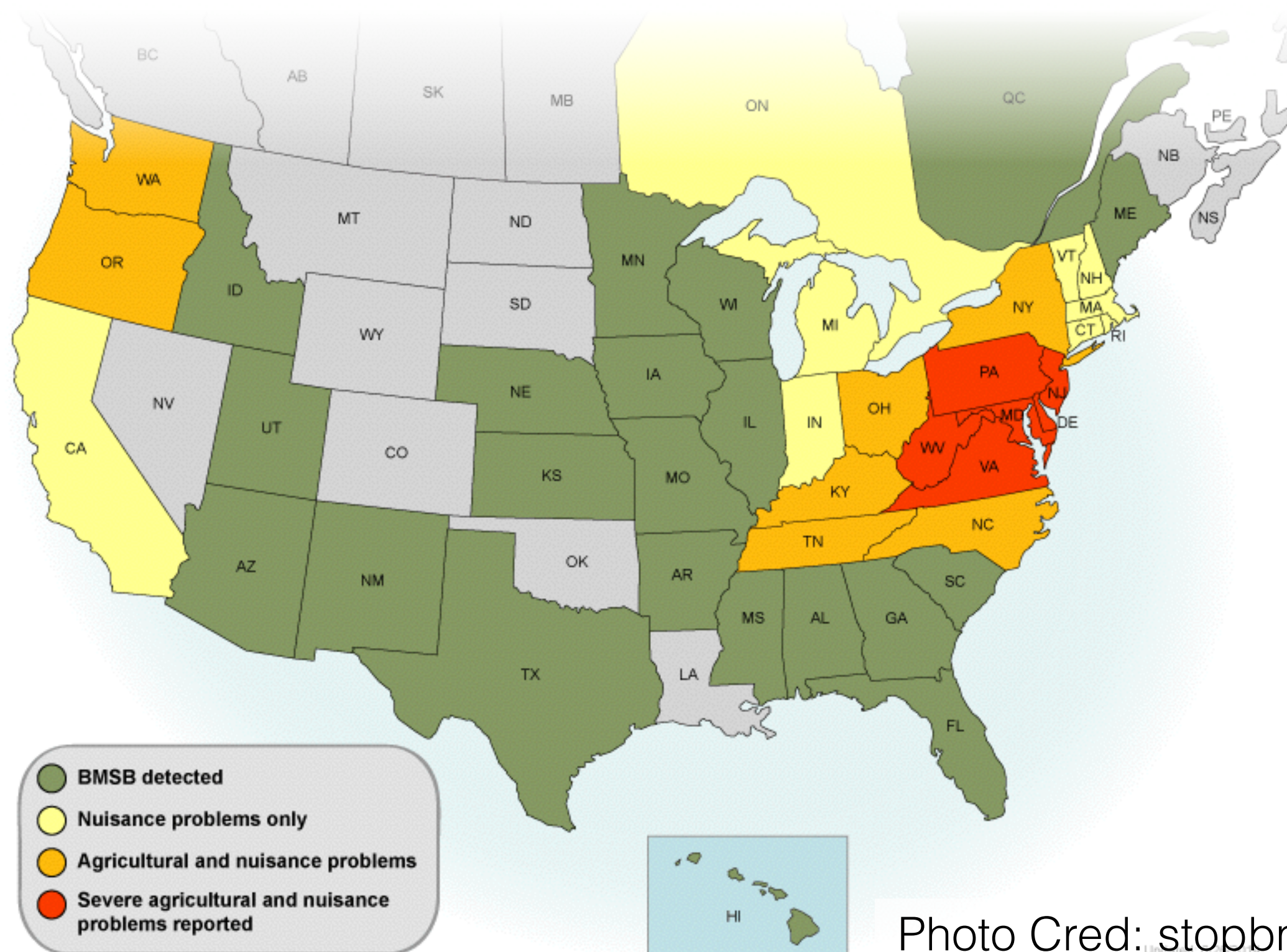
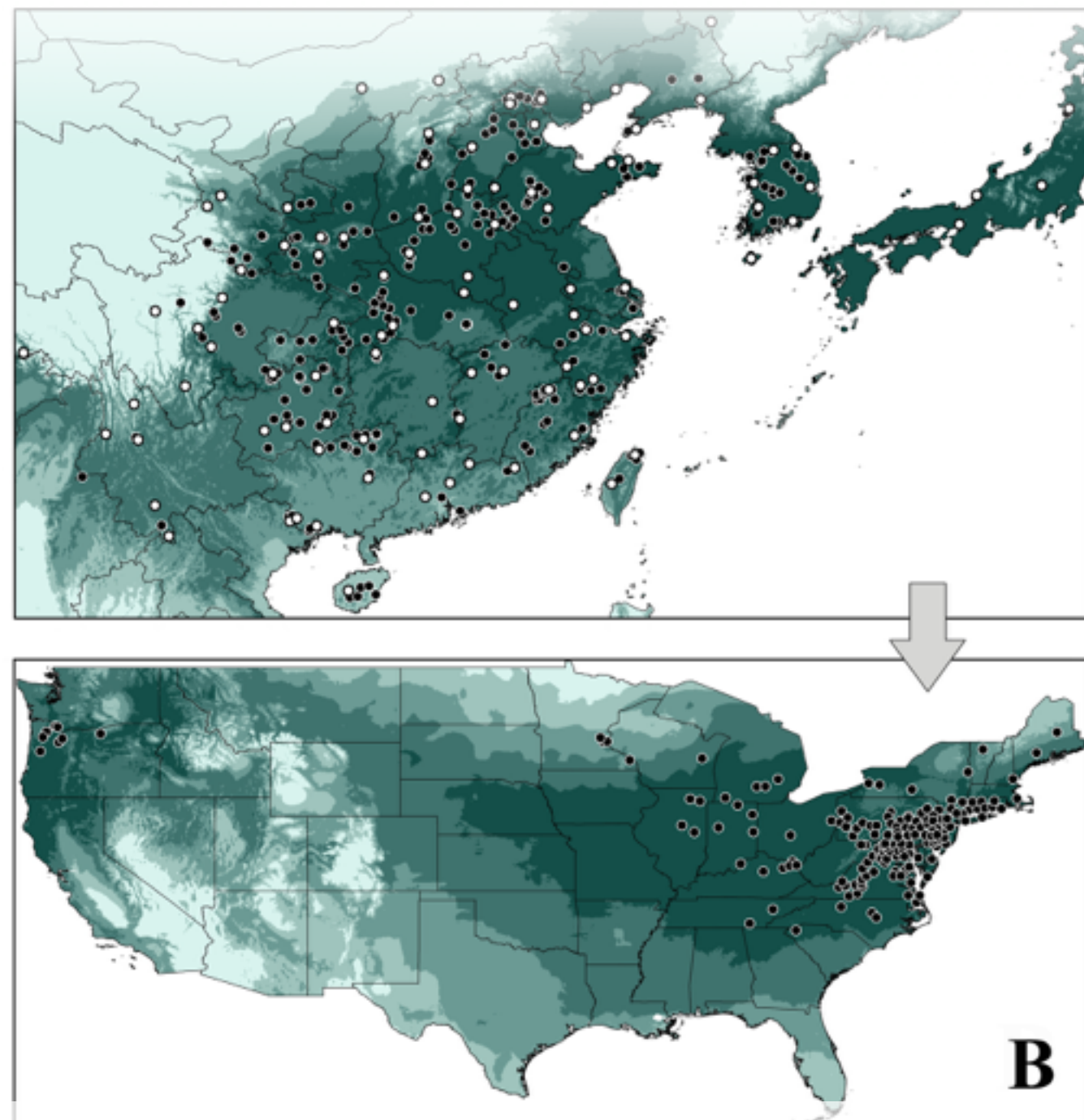


Photo Cred: stopbmsb.org

Brown Marmorated Stink Bug

Annual Mean Temperature
Max. temp. in the warmest month
Min. temp. in the coldest month
Annual precipitation
Precip. of the wettest month
Precip. of driest month
Annual mean radiation
Highest weekly radiation
Lowest weekly radiation
Elevation



Zhu et al. (2012)

Brown Marmorated Stink Bug



New Jersey Agricultural Experiment Station

Brown Marmorated Stink Bug

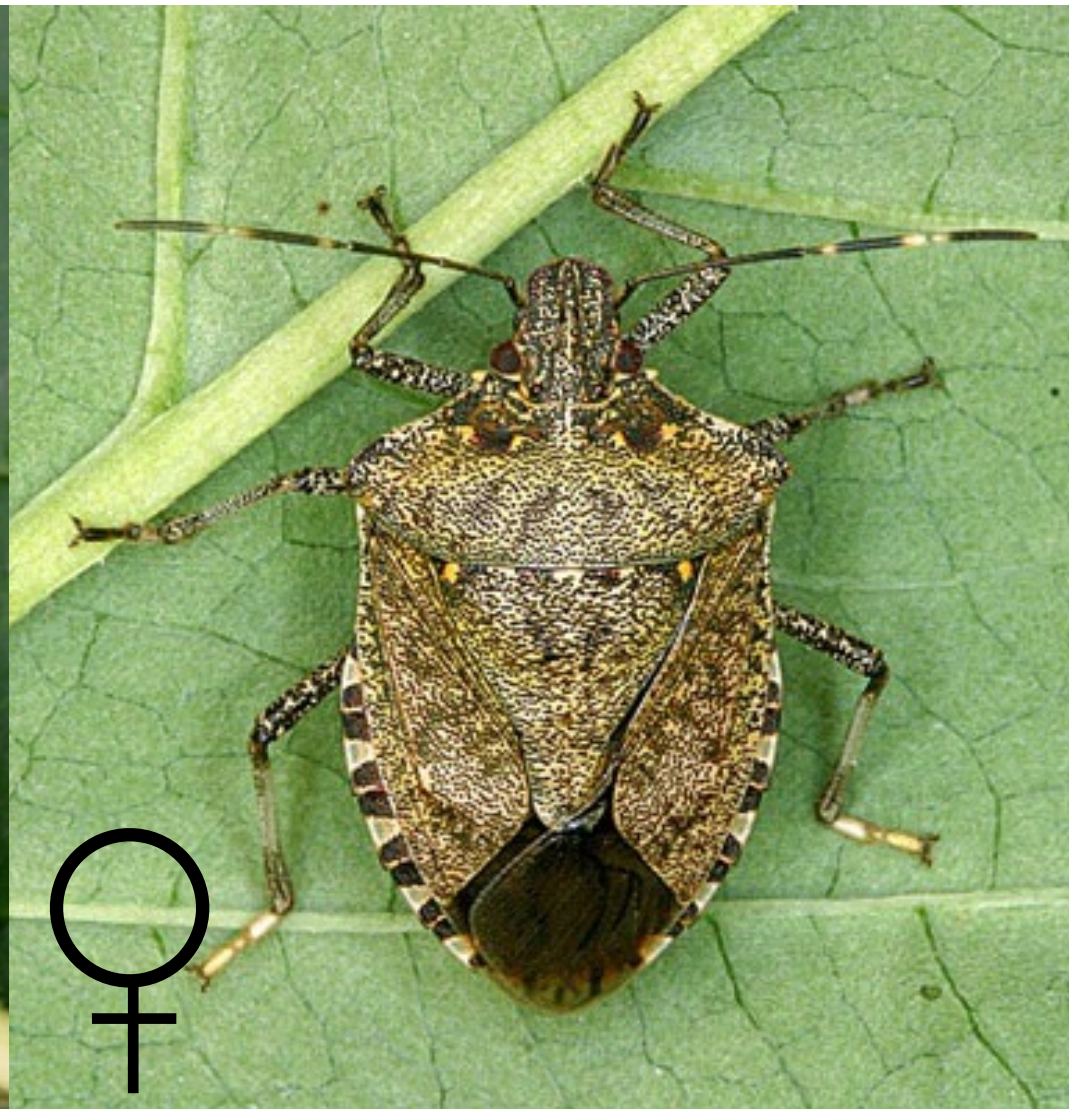


New Jersey Agricultural Experiment Station

Brown Marmorated Stink Bug



Brown Marmorated Stink Bug



New Jersey Agricultural Experiment Station

Brown Marmorated Stink Bug



UGA1113011

Brown Marmorated Stink Bug

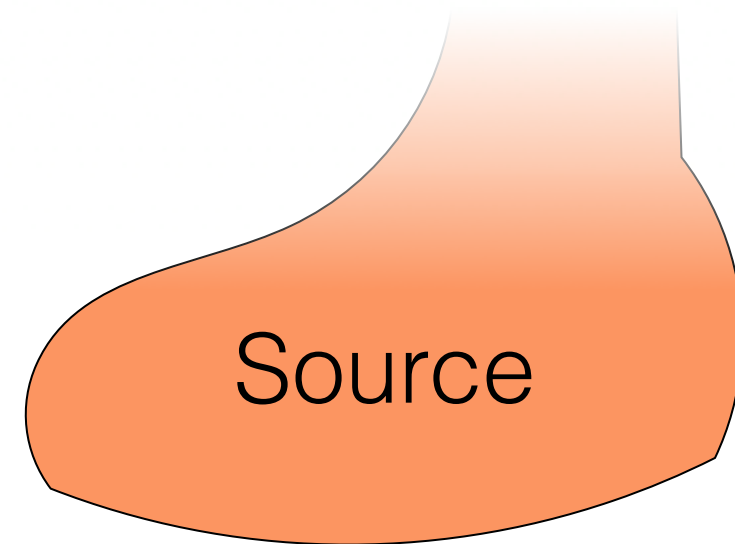


Brown Marmorated Stink Bug



Check crop borders

Brown Marmorated Stink Bug



Trap Crop

Cash Crop

Chilli Thrips

Scirtothrips dorsalis (Hood)



UGA5207025

Chilli Thrips

Scirtothrips dorsalis (Hood)

2005: First detection in NA

- Roses in Florida

2007: First identified in Houston

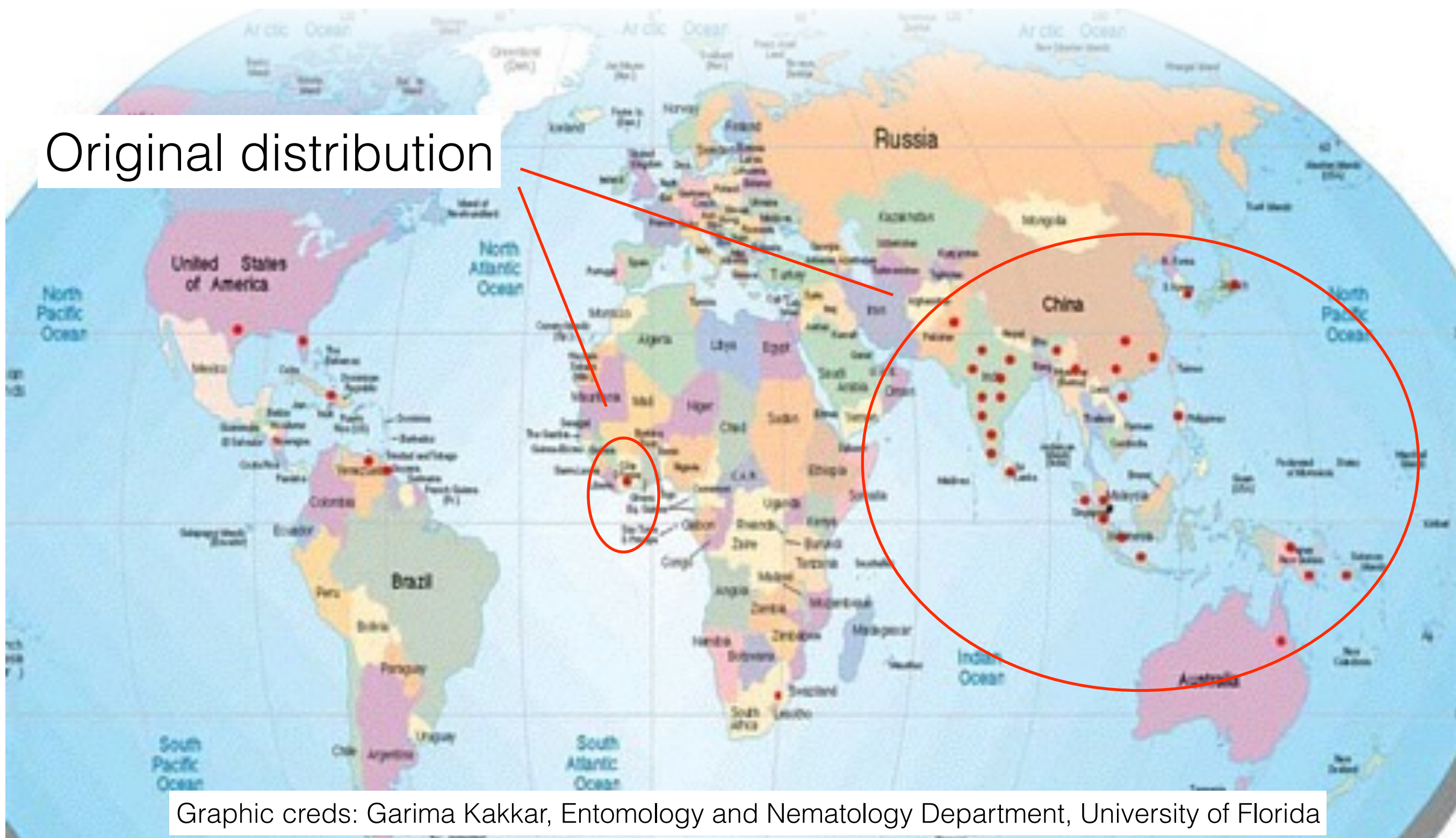
- Landscape roses

Detected on a number of ornamental and vegetable plants in retail stores in Northeast and South Texas



Chilli Thrips

Original distribution

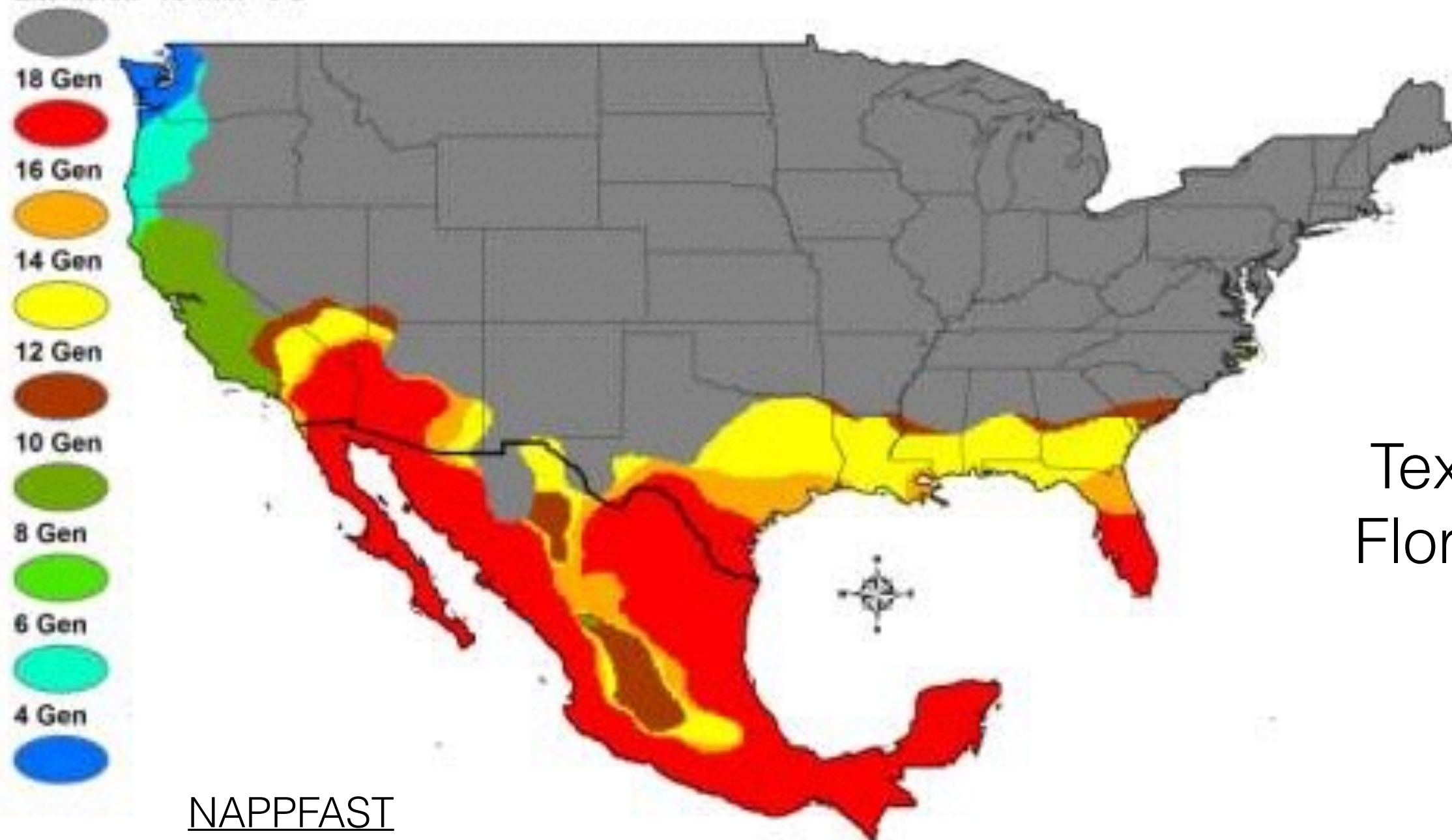


Graphic creds: Garima Kakkar, Entomology and Nematology Department, University of Florida

Chilli Thrips

Distribution in North America

Exclusion -4C min >5 D



Texas
Florida

NAPPFAS

Chilli Thrips

Host plants

More than 225 host plants from 32 orders of plants

Begonia *Capsicum*
spp. Citrus spp. Poinsettia Jasmine Crape
myrtle

Geranium Coleus Azalea Knockout
rose Marigold Highbush
blueberry

Chilli Thrips

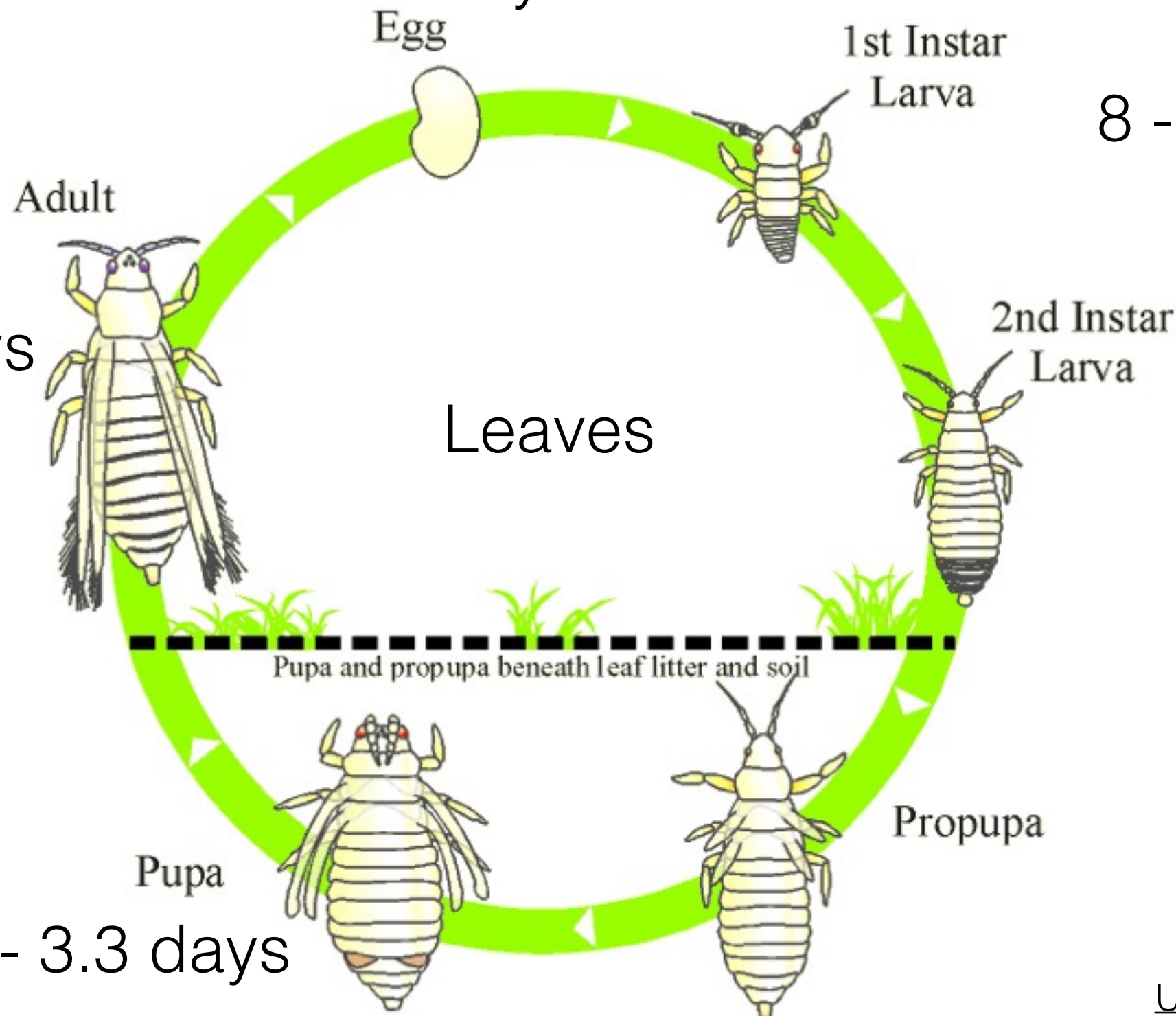
2 - 7 days

8 - 10 days

~13 - 16 days

(Depends on
host plant)

2.6 - 3.3 days



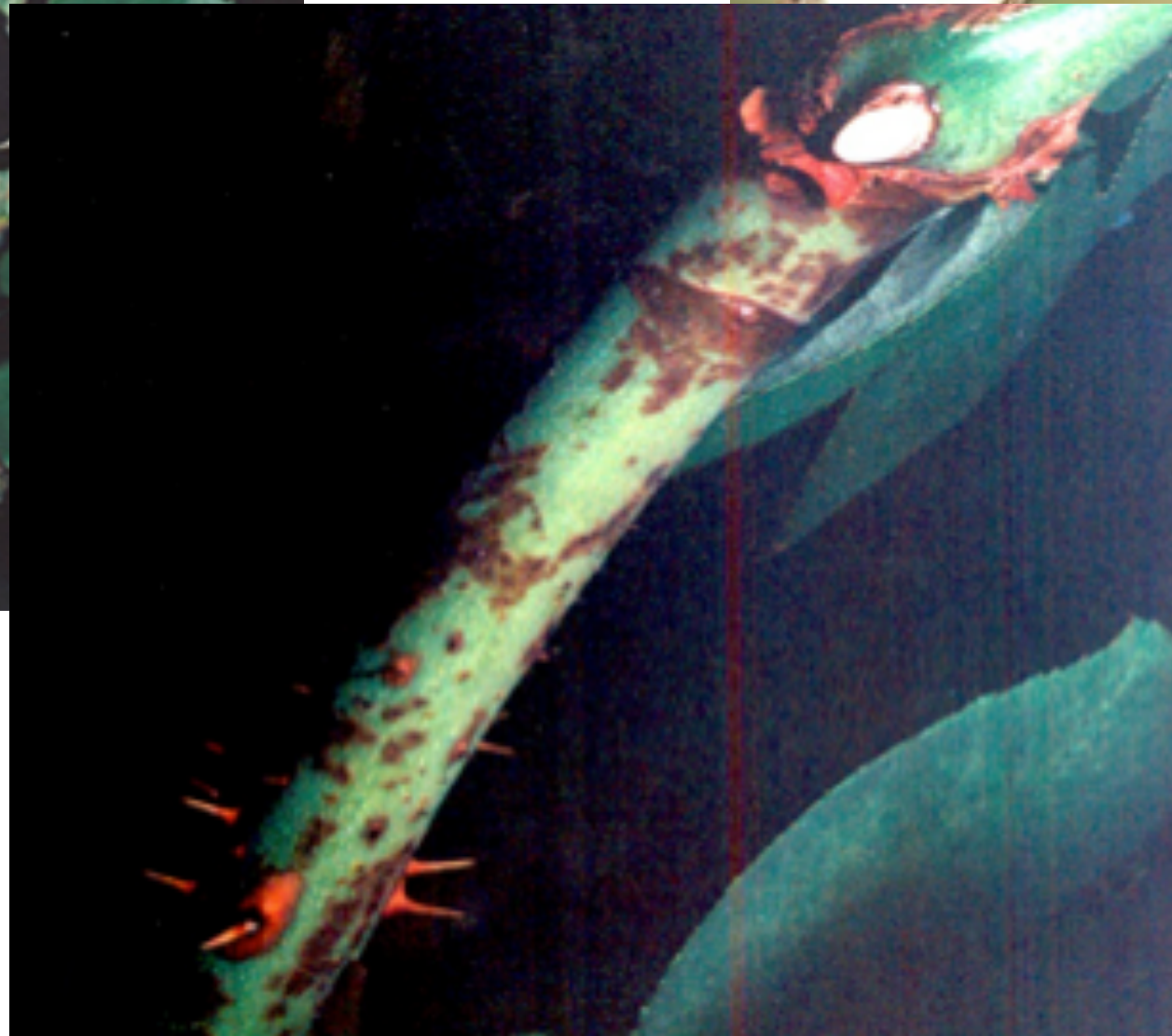
Chilli Thrips

Signs & Identification | Roses



Chilli Thrips

Signs & Identification | Roses



Chilli Thrips

Signs & Identification | Roses



Chilli Thrips

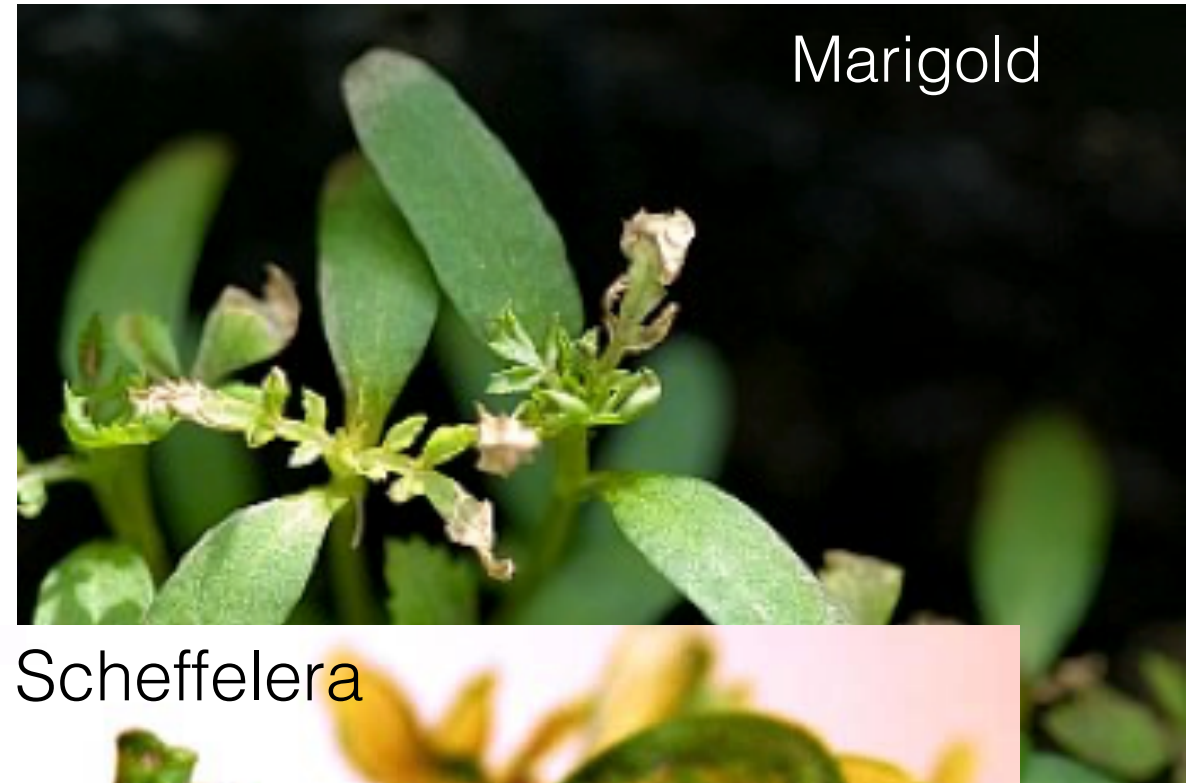
Signs & Identification

Viburnum



Steven Brown, Lee County Extension

Marigold



Scheffelera



Steven Brown, Lee County Extension



Basil

Chilli Thrips

Plant pathogen vectors

Strong virus transmission behavior for seven recorded viruses:

- Chilli Leaf Curl (CLF)
- Peanut Necrosis Virus (PBNV)
- Tobacco Streak Virus (TSV)
- Melon Yellow Spot Virus (MYSV)
- Watermelon Silver Mottle Virus (WsMoV)
- Capsicum chlorosis virus (CaCV)

Chilli Thrips

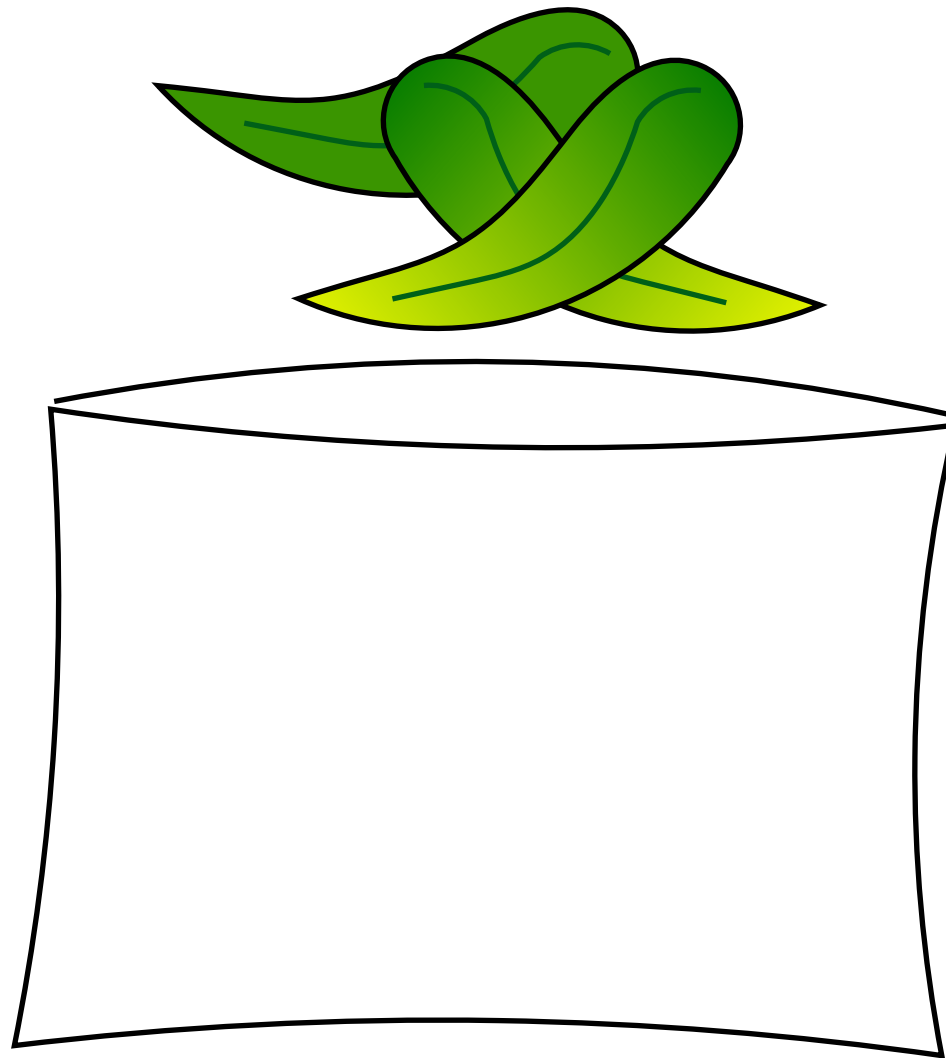
Signs & Identification



Scot Nelson

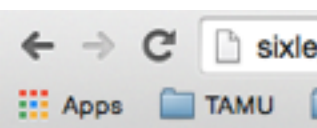
Chilli Thrips

Signs & Identification



Chilli Thrips

Signs & Identification



Send this form and samples by Overnight Delivery to:

Erfan Vafaie
Extension Program Specialist
Integrated Pest Management
Texas A&M AgriLife Research & Extension Center
1710 FM 3053 North
Overton, TX 75684

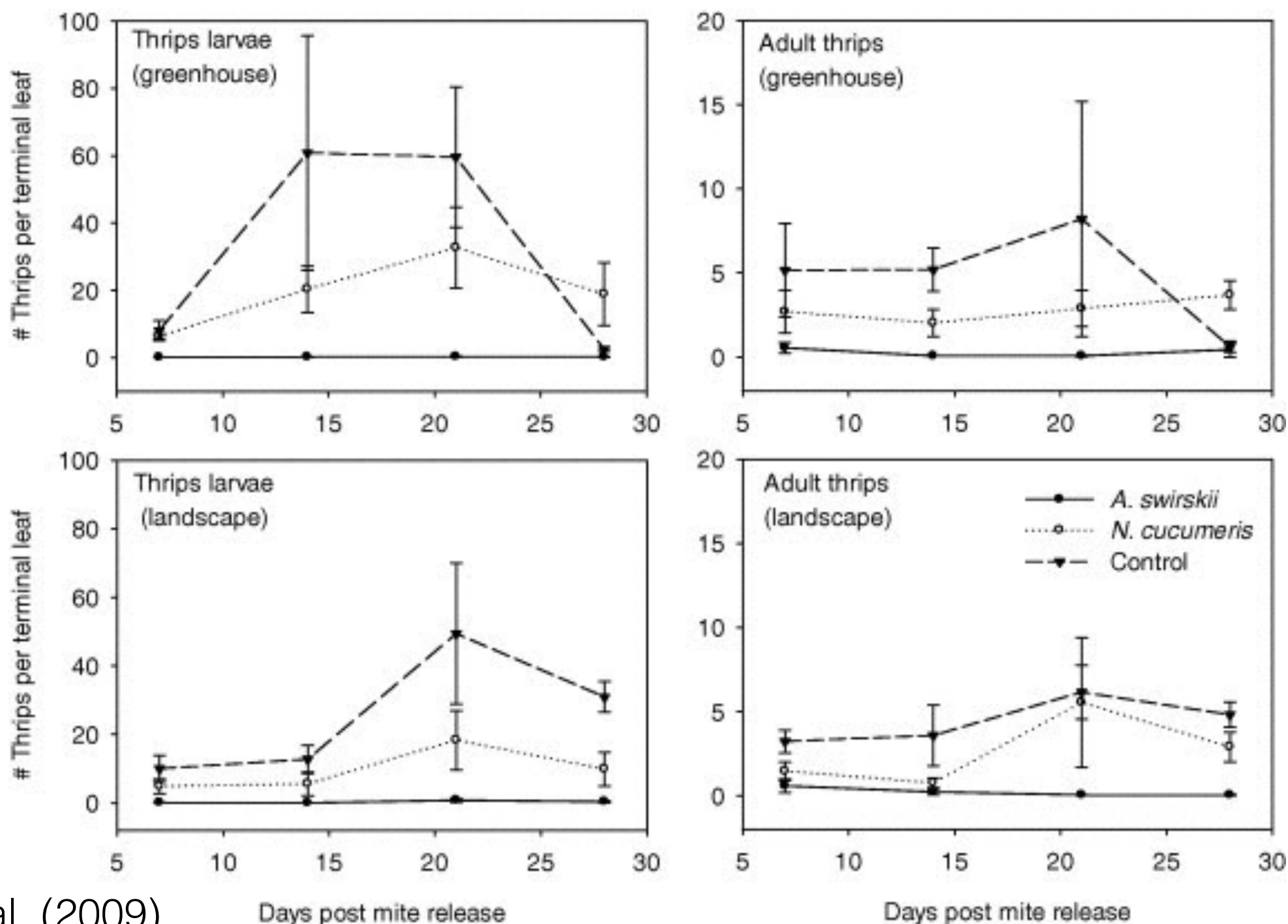
General Insect Identification

Specimens Submitted By			
Full Name:			Date:
	<i>Last</i>	<i>First</i>	<i>M.I.</i>
Mailing Address:			
	<i>Street Address</i>	<i>Apartment/Unit #</i>	
	<i>City</i>	<i>State</i>	<i>ZIP Code</i>
Phone:			Email:
Specimen Information			
County where specimens were taken			Date specimens collected:
Host plant from which specimens were taken:			Number of bags/containers submitted:



Chilli Thrips

Biological Control



Chilli Thrips

Biological Control

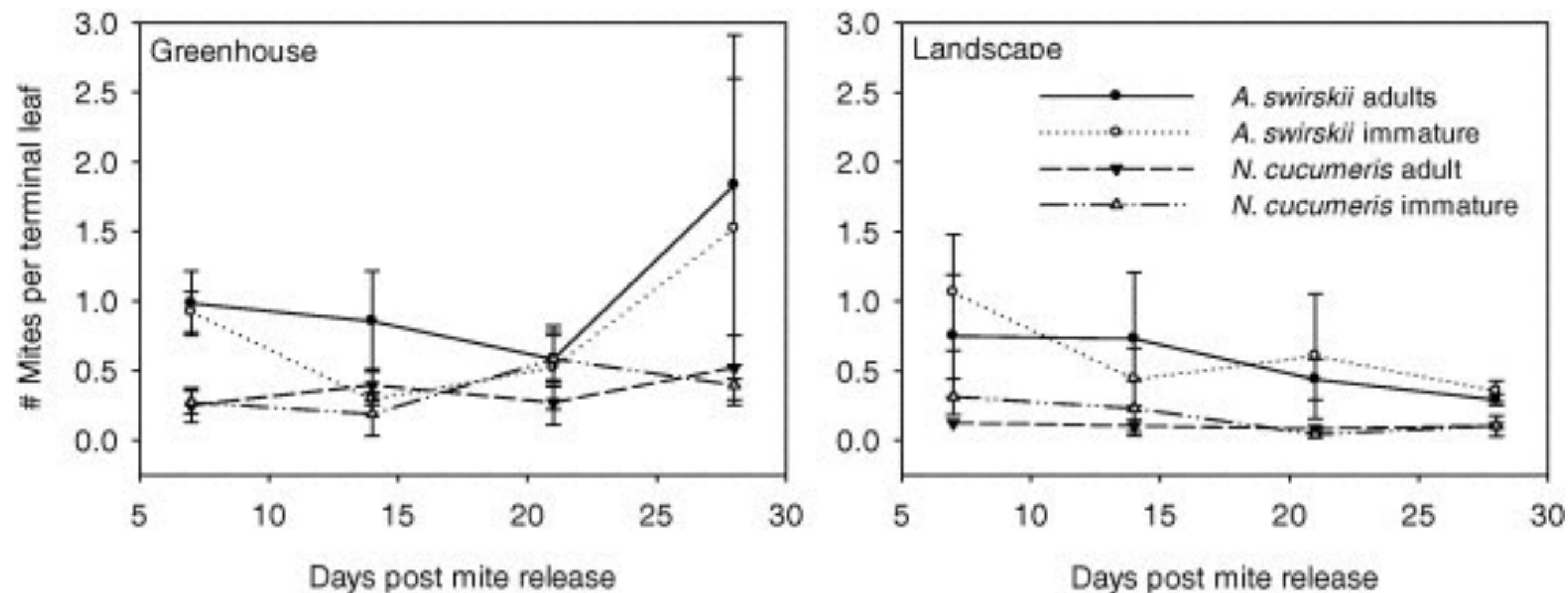




Photo Cred: Gilles San Martin



Lady beetle:
Larva: 90 – 370 aphids/day
Adults: 15 – 65 aphids/day
Lifespan: 30 – 90 days



Photo Cred: Colin Hutton



Chilli Thrips

Chemical Control

Seal & Kumar (2010)

Residual Control (days)

Foliar

Soil

Common name	Trade Name	IRAC Class	Adult	Larvae	Adult	Larvae
Abamectin	Agrimek, Avid	6	2	2	-	-
Acephate	Orthene	1B	7	7	7	7
Chlorfenapyr	Pylon	13	7	7	-	-
Dinotefuran	Venom, Safari SG	4A	10	15	0	0
Imidacloprid	Marathon, Provado, Admire	4A	15	15	15	15
Novaluron	Pedestal, Ramon	15	7 - 14	7 - 14	-	-
Spinosad	Conserve, SpinTor	5	15	15	-	-
Spinetoram	Radiant	5	15	15	15	15
Thiamethoxam	Actara, Platinum	4A	10	15	10	15
Borax + orange oil + detergents	Tricon	8D	10	10	-	0
<i>Beauvaria basiana</i>	Botanigard	NA	3 - 7	3 - 7	-	0
<i>Metarhizium anisopliae</i>	Met52	NA	7	7	-	0

Cycad aulacaspis scale

Aulacaspis yasumatsui



UGA5194062

Cycad aulacaspis scale

Aulacaspis yasumatsui

Native to:
China and Thailand

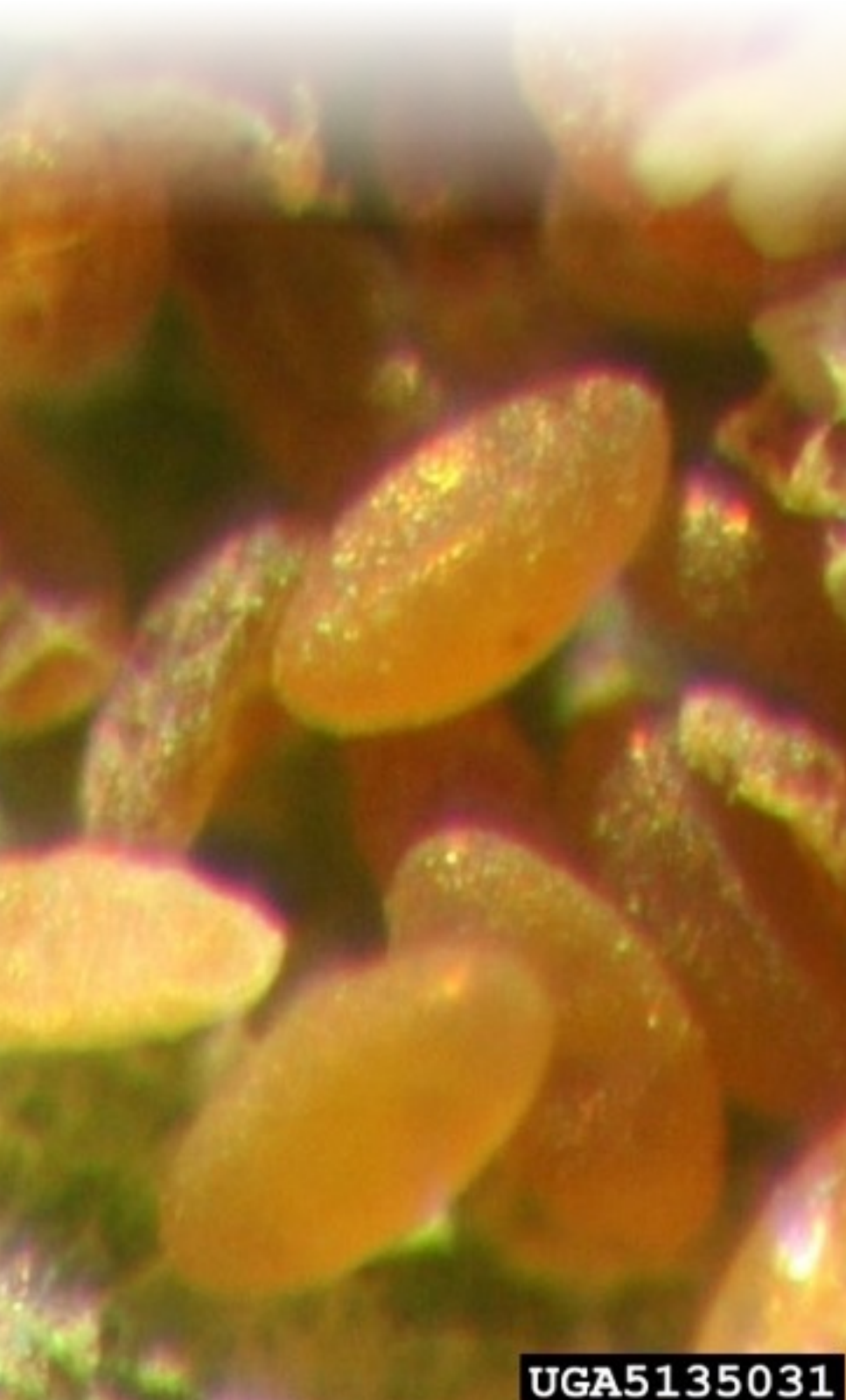
1996: First introduction in Miami-Dade County, Florida

Since 2015, reported in:

- Alabama, California, Georgia, Hawaii, Louisiana, South Carolina, and Texas

Cycad aulacaspis scale

Aulacaspis yasumatsui



UGA5135031



UGA5194054

Cycad aulacaspis scale

Aulacaspis yasumatsui



UGA5194075

Cycad aulacaspis scale

Aulacaspis yasumatsui



UGA5194093

Cycad aulacaspis scale

Aulacaspis yasumatsui



UGA5135032

Cycad aulacaspis scale

Aulacaspis yasumatsui



UGA5194080

Cycad aulacaspis scale

Aulacaspis yasumatsui

Monitor

- Look for honeydew (shiny leaves & sticky surfaces)
- Check undersides of leaves, near the petiole

Higher infestation:

- Check top-side of leaf surface for presence of scale
- Determine cause of leaf yellowing and frond necrosis

Cycad aulacaspis scale

Aulacaspis yasumatsui

Control I Biological



Coccobius fulvus

UGA5195003

UGA5194080

Cycad aulacaspis scale

Aulacaspis yasumatsui

Control I Biological



Coccobius fulvus

UGA5194099

5194080

Cycad aulacaspis scale

Aulacaspis yasumatsui

Control I Biological



UGA1235215

UGA5194080

Cycad aulacaspis scale

Aulacaspis yasumatsui

Control I Soft Insecticidal

2 - 3 applications, 5 - 10 days apart:

- Horticultural Oil
- or
- Insecticidal Soap

Cycad aulacaspis scale

Aulacaspis yasumatsui

Control | Hard Insecticidal

- Thiamethoxam (systemic)
- Imidacloprid (systemic)
- Dimethoate (systemic)

Not always effective (according to UF|IFAS)

New Invasive Insects

What are they and what to do about them



Erfan Vafaie
Extension Program Specialist IPM
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903-834-6191

TEXAS A&M
AGRI LIFE
EXTENSION

Thank you

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sixleggeddaggie.com