Most Common Culprits

Main culprits how we stop them from eating your crops.

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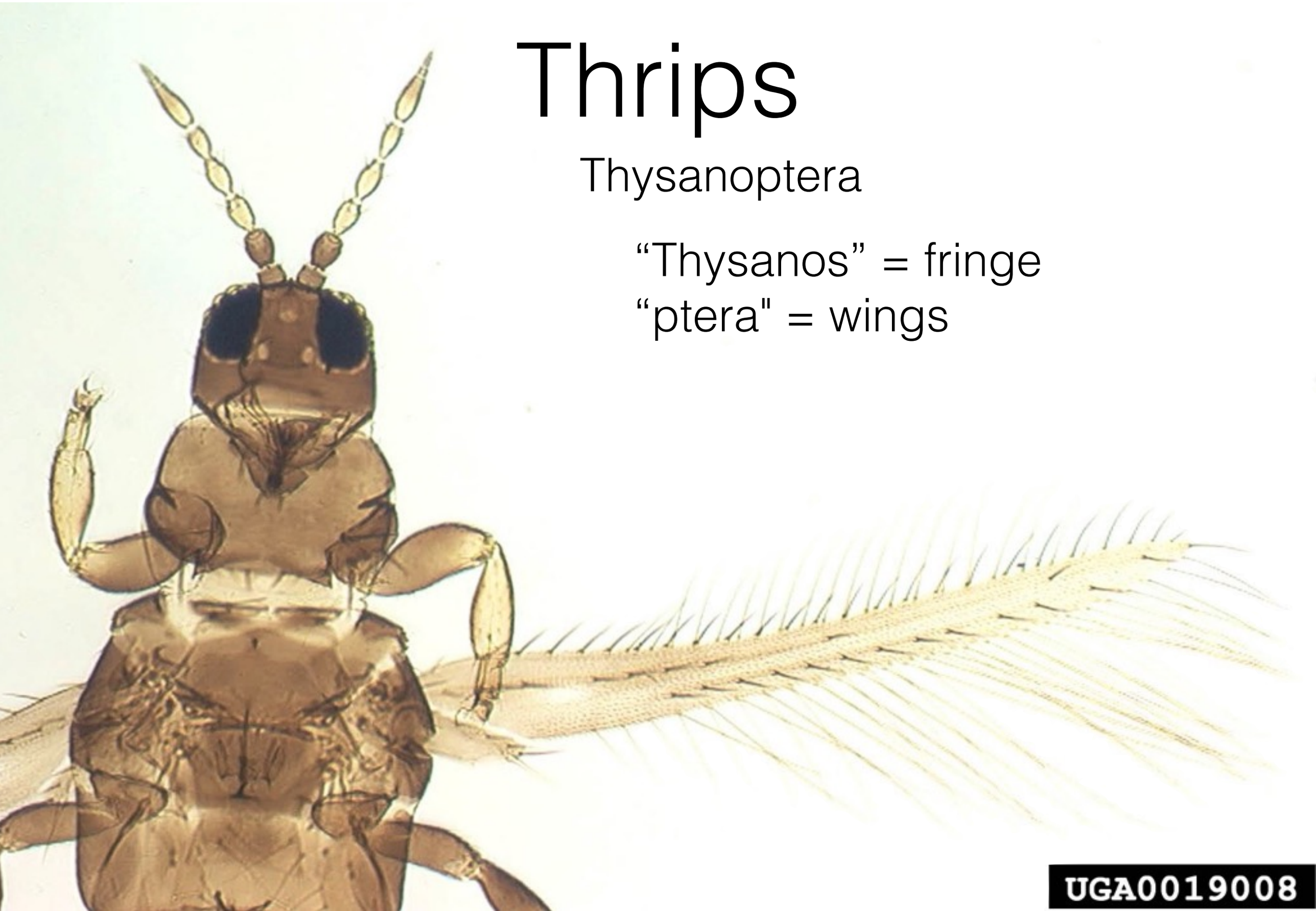
Texas A&M AgriLife Extension

Main Culprits*

Monitor and Control

* May result in hair loss or temper tantrums



Thrips

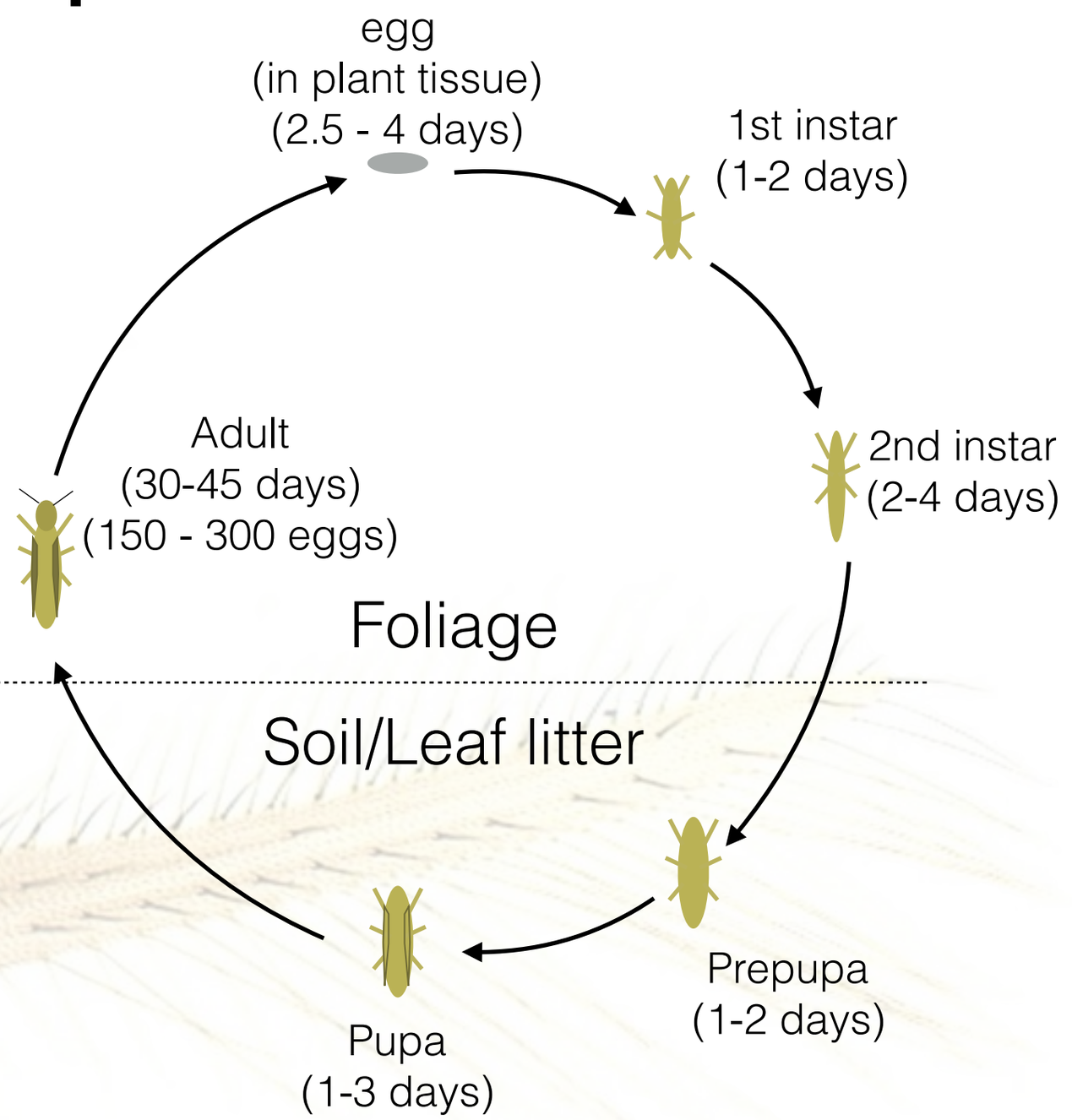
Thysanoptera

"Thysanos" = fringe
"ptera" = wings

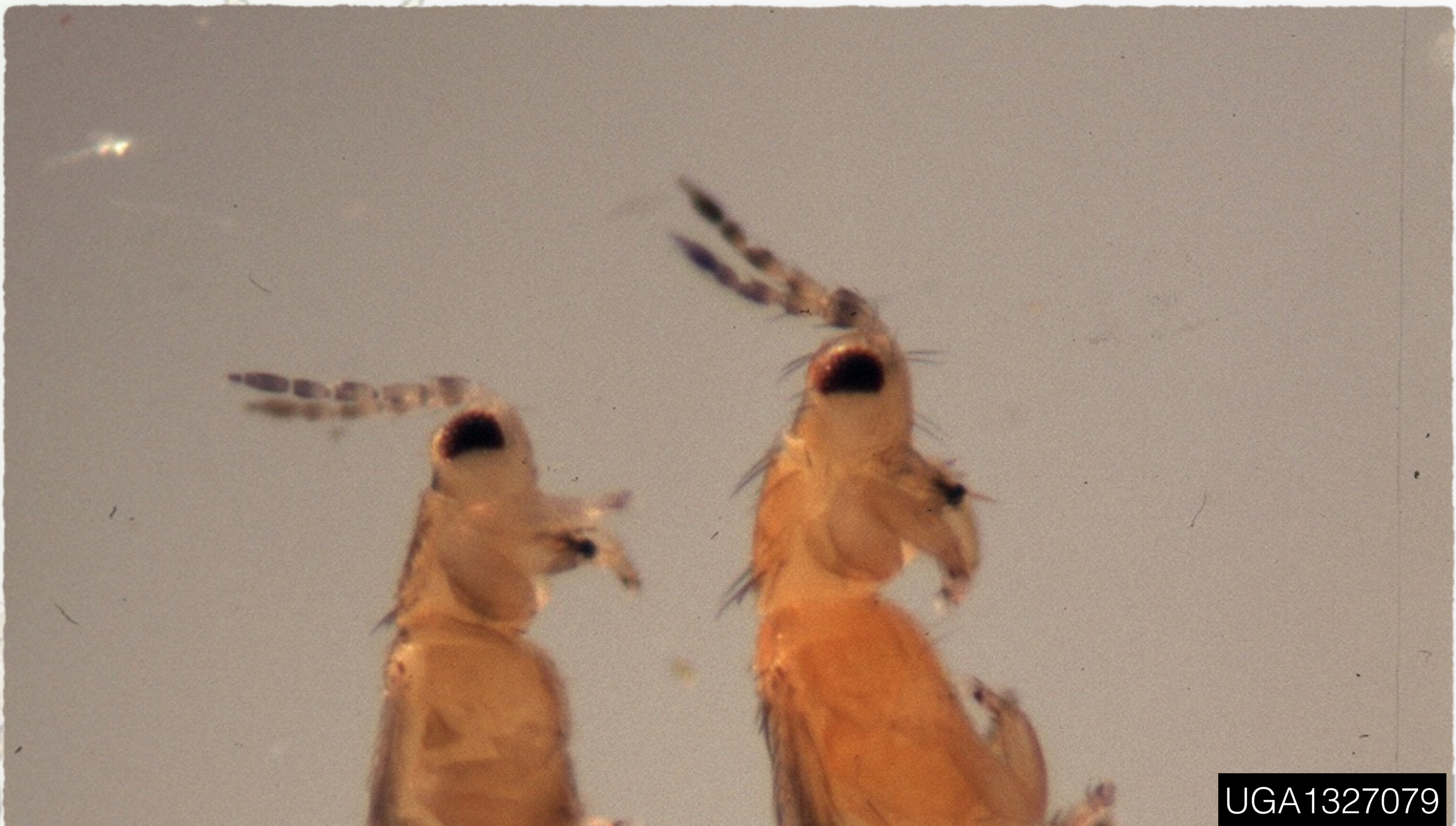
Thrips

UGA0019008

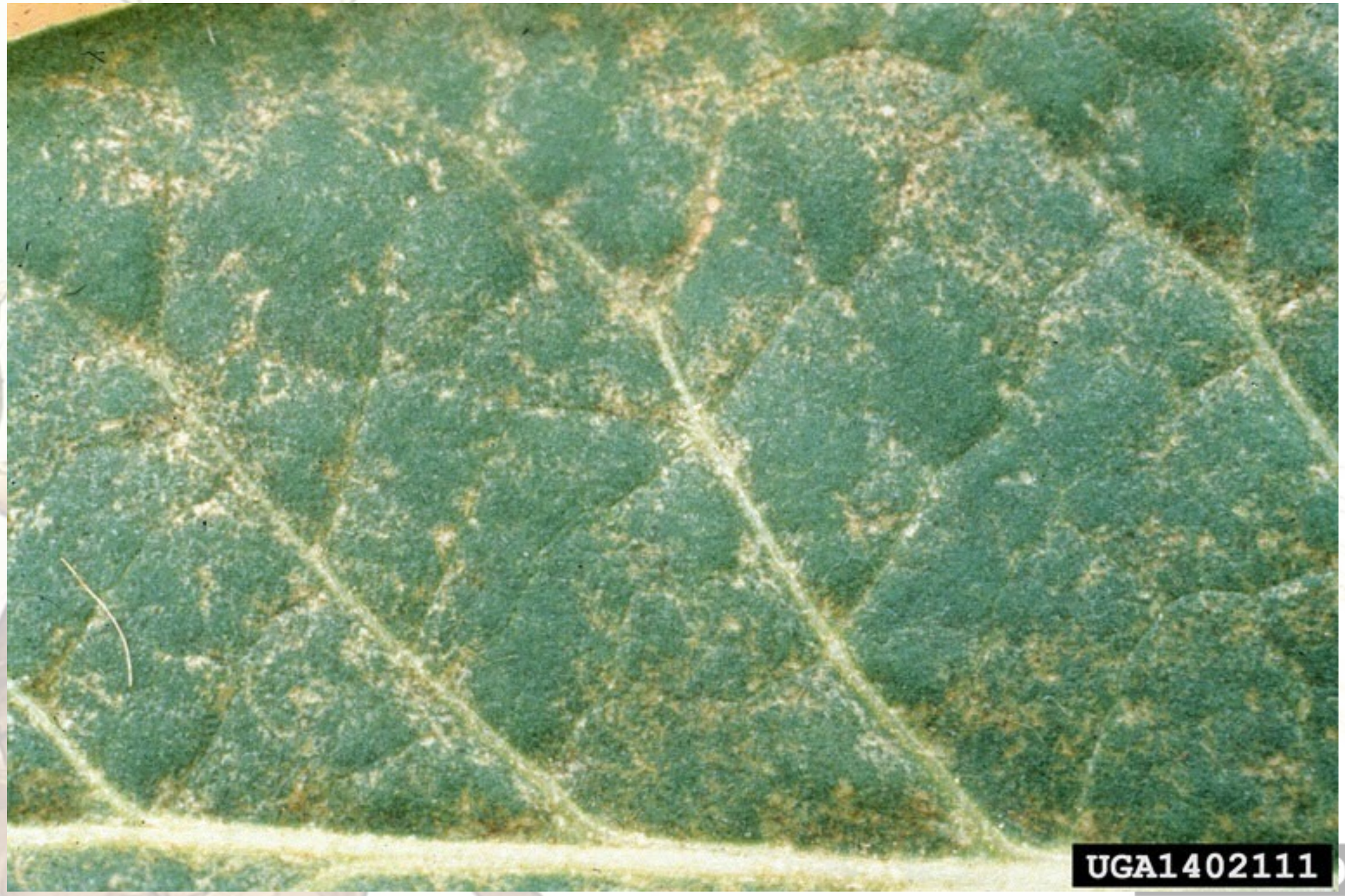
Thrips



Thrips



Thrips



Thrips

Thrips

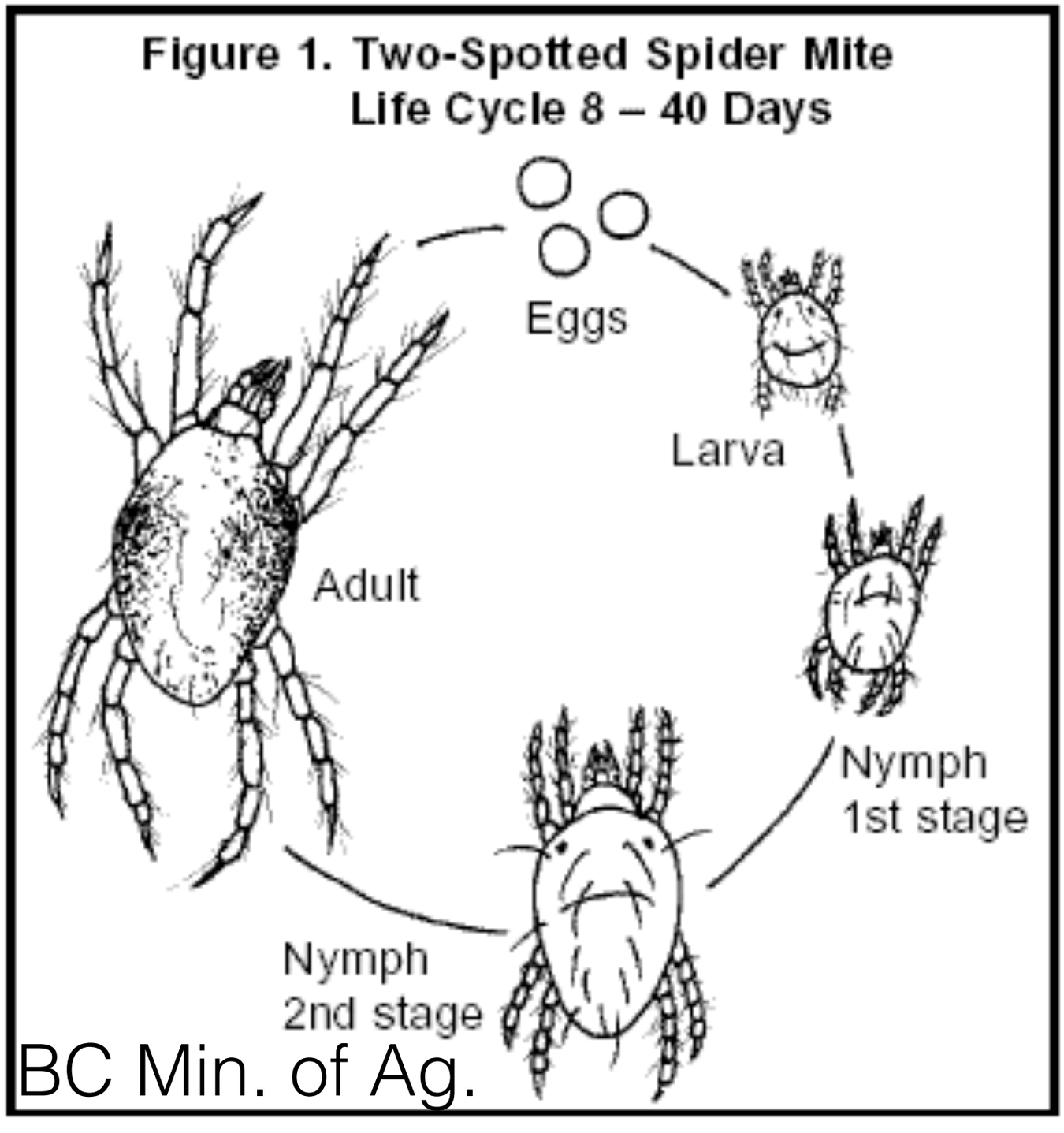
Scot Nelson

Twospotted spider mites

Twospotted spider mites

Twospotted spider mites

Twospotted spider mites



BC Min. of Ag.

Whiteflies & Aphids

Whiteflies & Aphids

Q-type

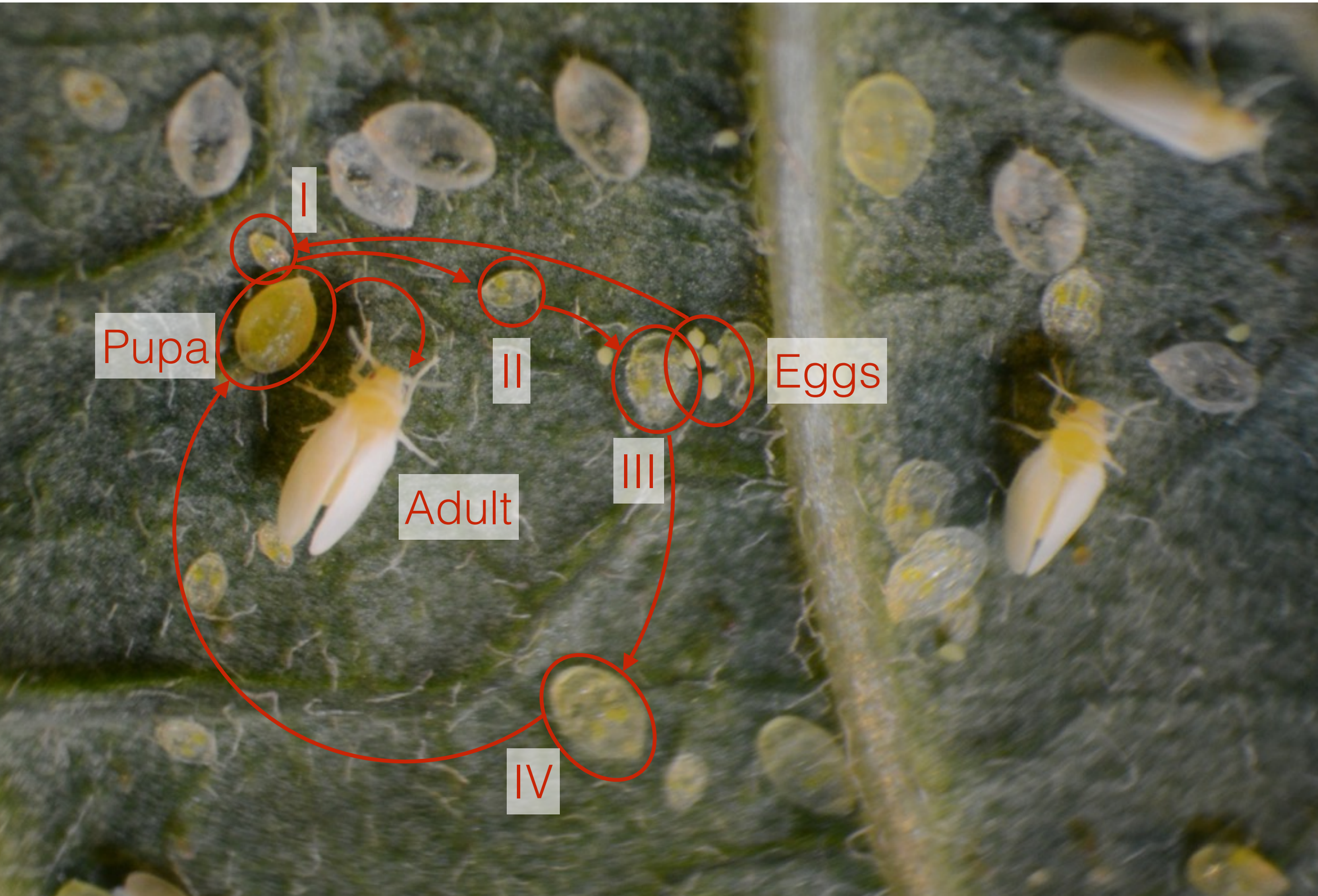
Bemisia tabaci

- Identified in US for the first time in 2004
- Higher resistance to pyriproxyfen and imidacloprid than B-type

B-type

Bemisia argentifolii

- More common
- Less pesticide resistance


I
Pupa
II
Eggs
III
Adult
IV

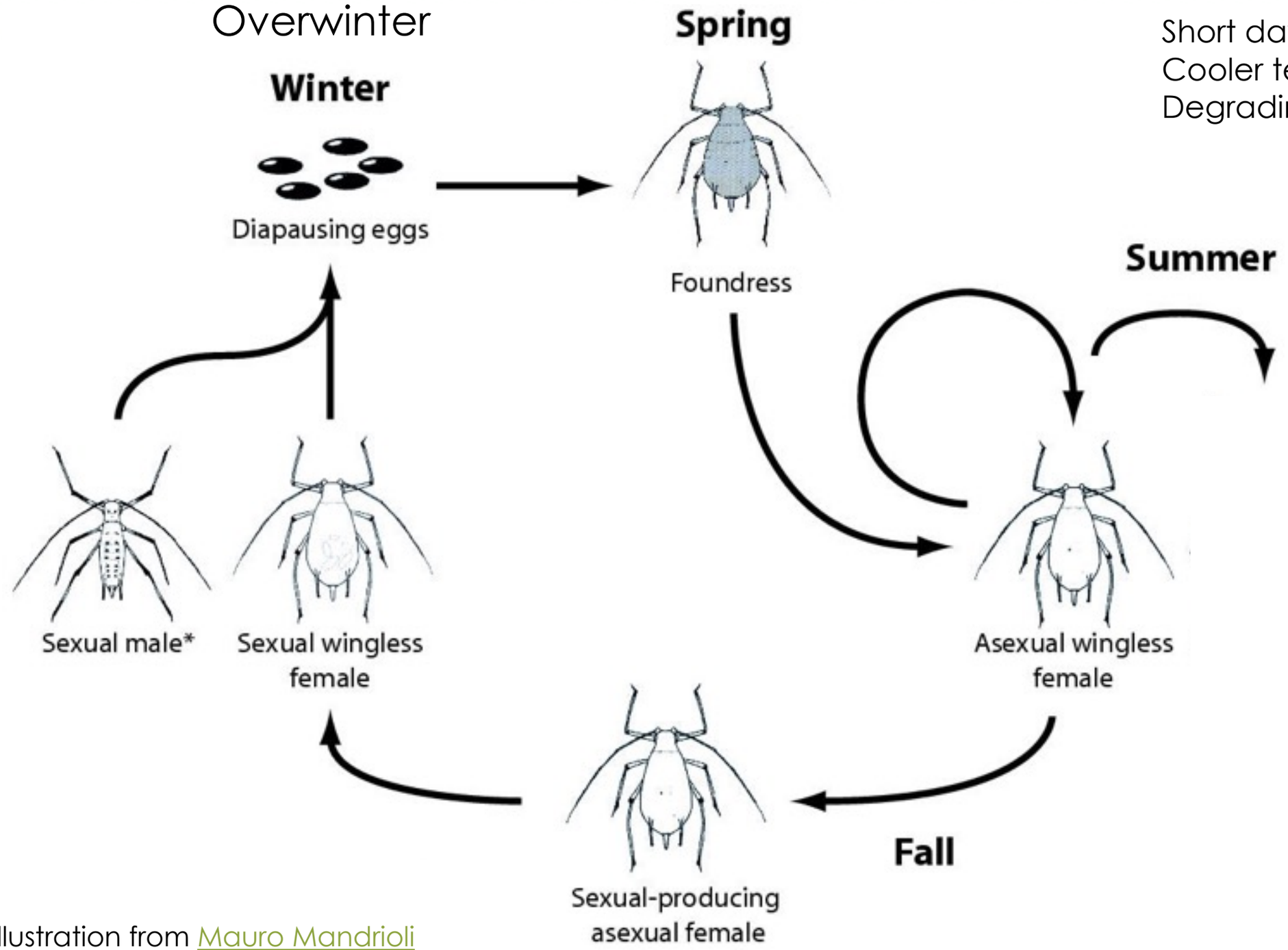

UGA0177096

Whiteflies & Aphids

Whiteflies & Aphids

Whiteflies & Aphids

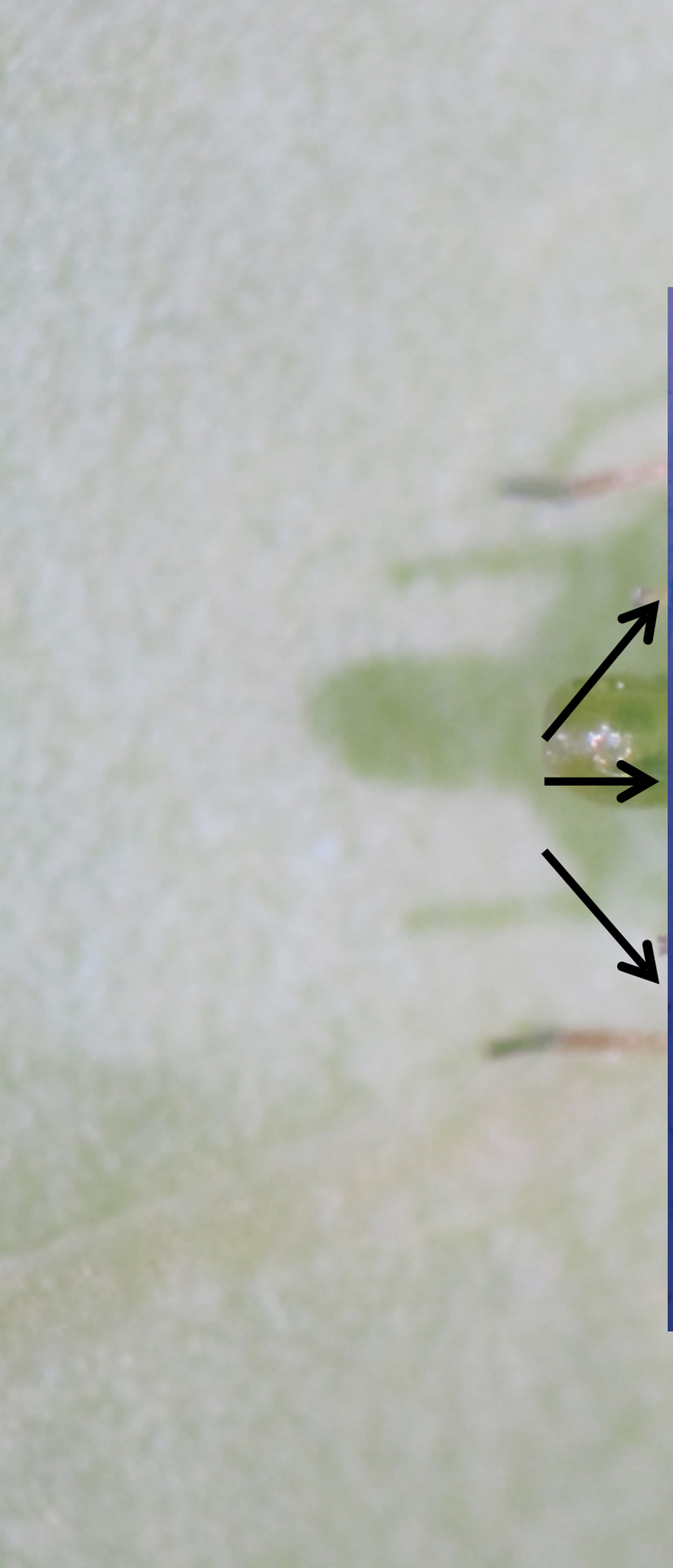
Overwinter

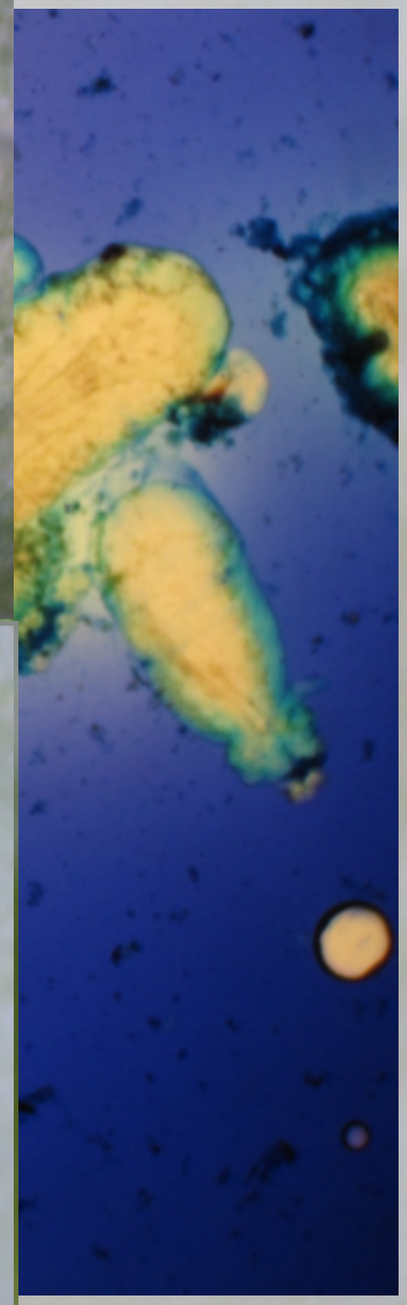


Short daylength
Cooler temperature
Degrading habitat

Illustration from Mauro Mandrioli


Cornicles





Monitor


Thrips


Twospotted
Spider Mites


Armyworms


Whiteflies &
Aphids

Monitor


Thrips


Twospotted
Spider Mites


Armyworms


Whiteflies &
Aphids

Monitor

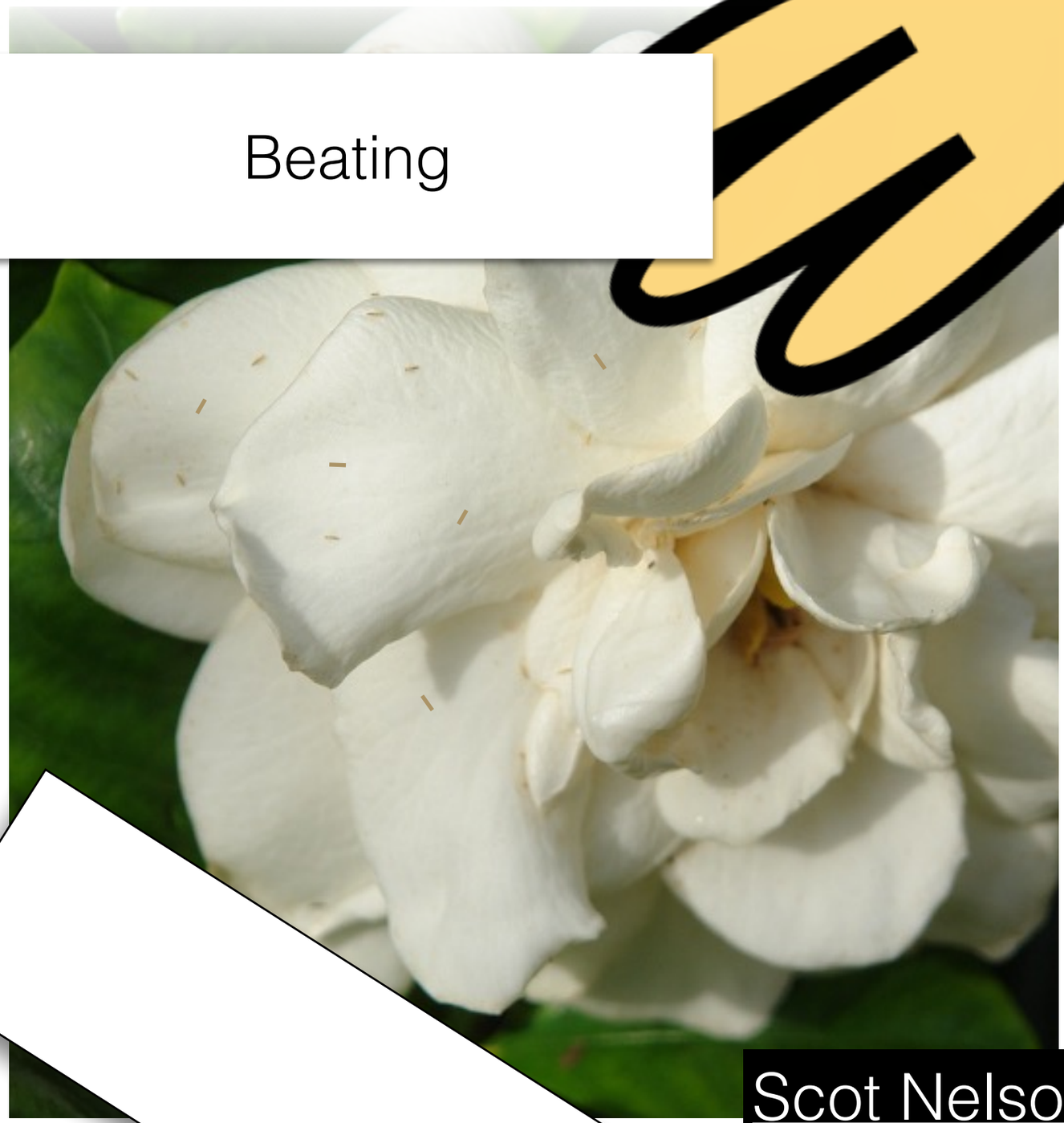
Sticky cards
(Yellow/Blue)

Monitor

Rasping/Stippling

Monitor

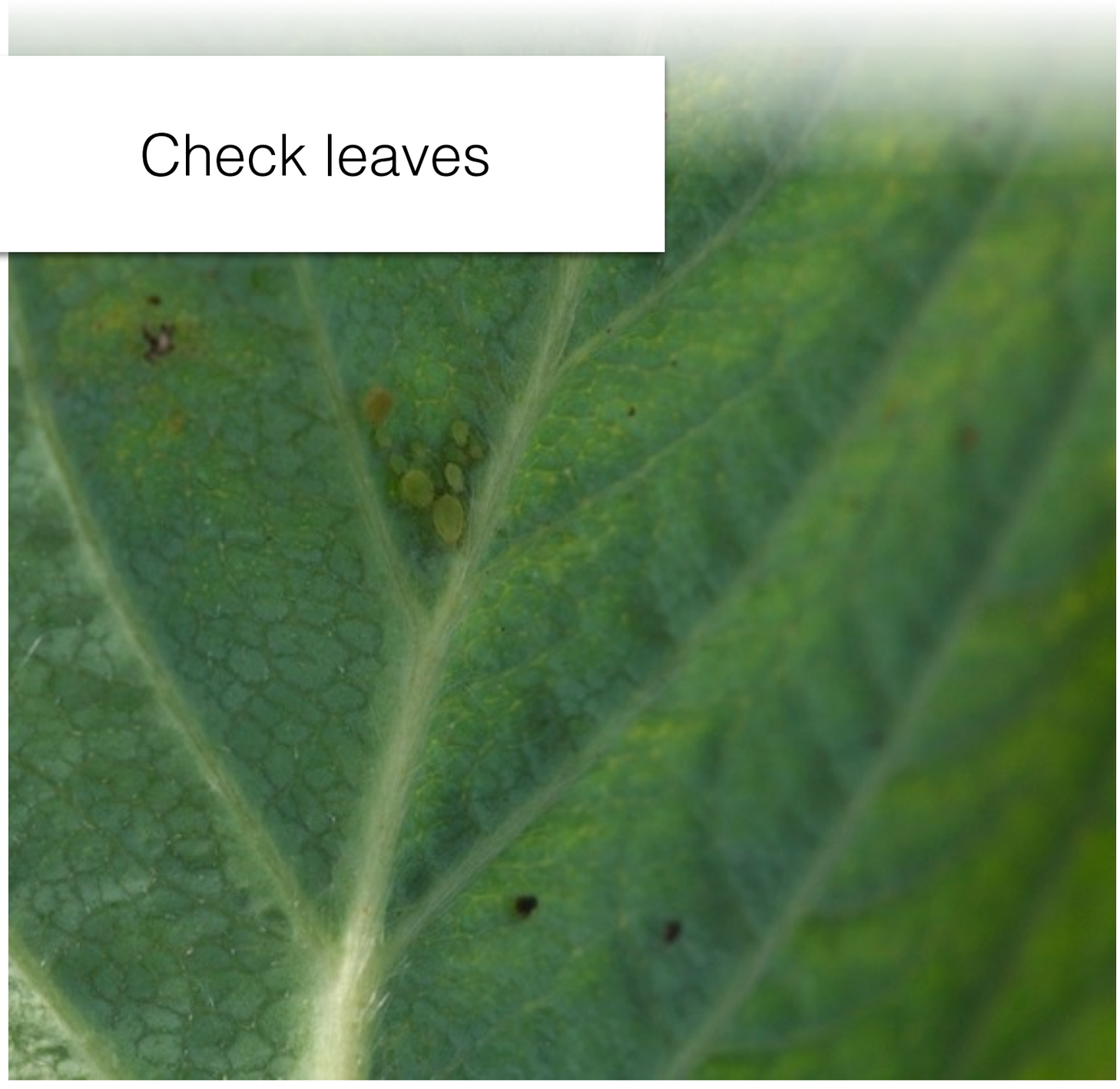
Beating



Scot Nelson

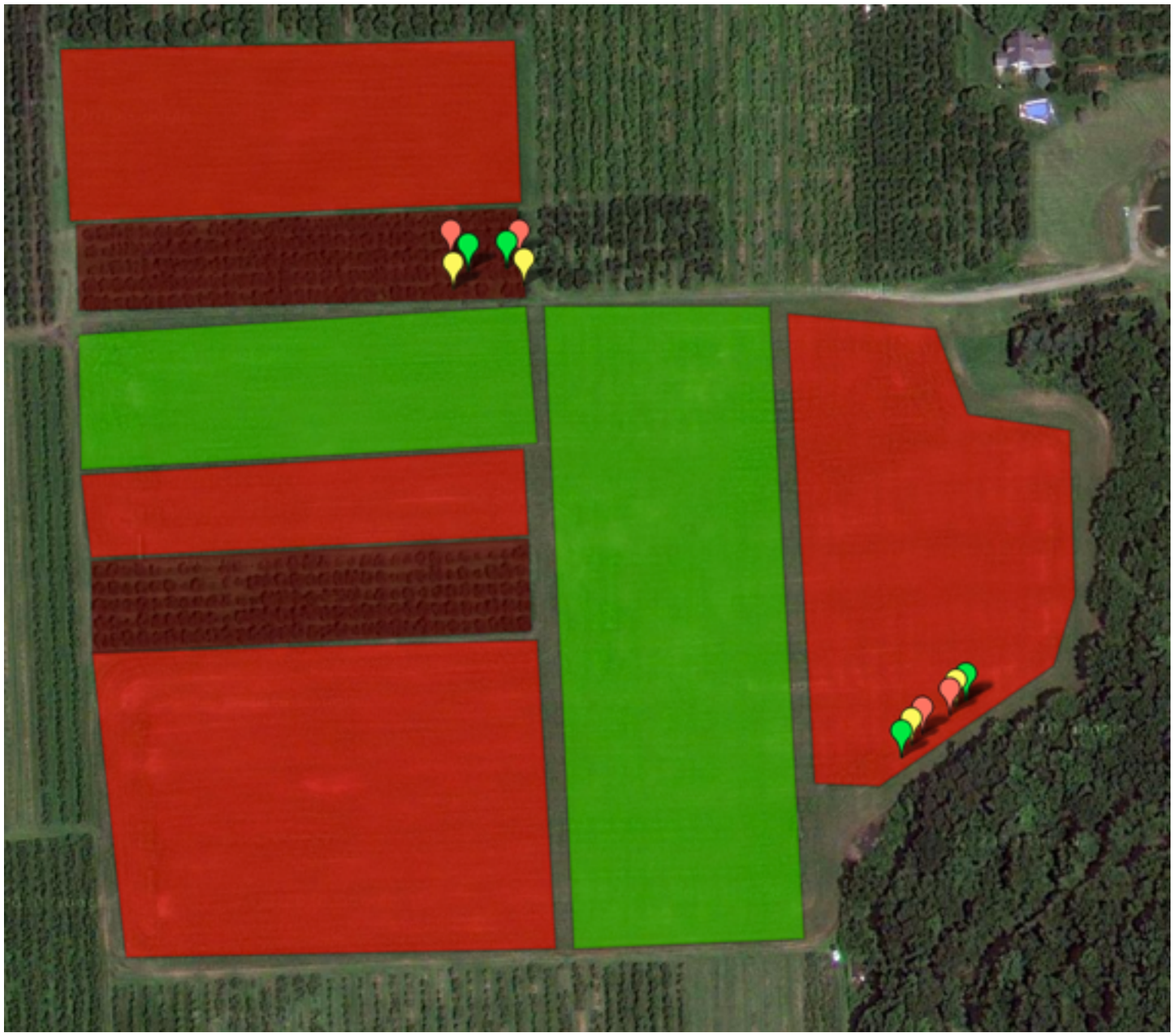
Monitor

Check leaves

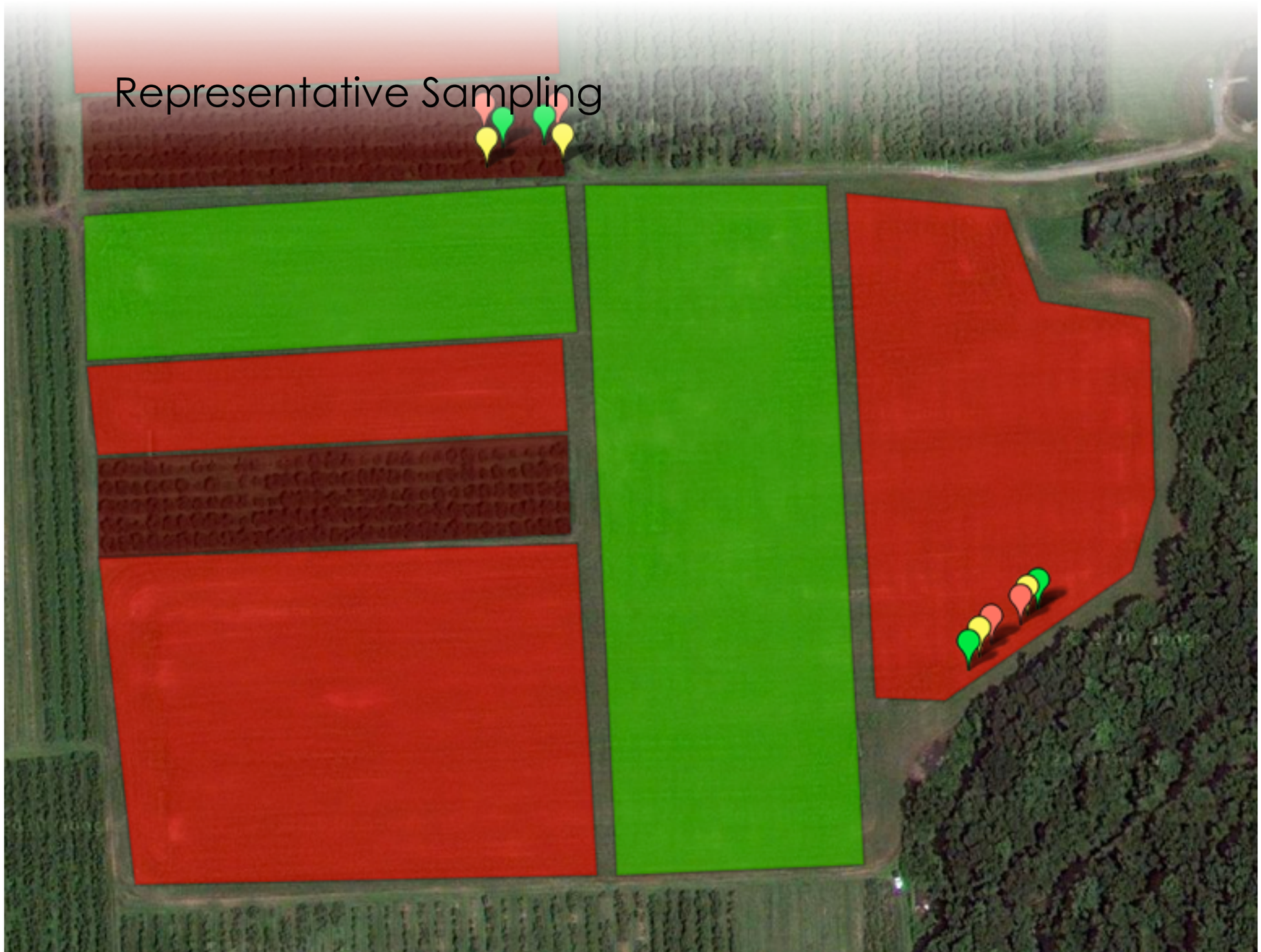


Monitor

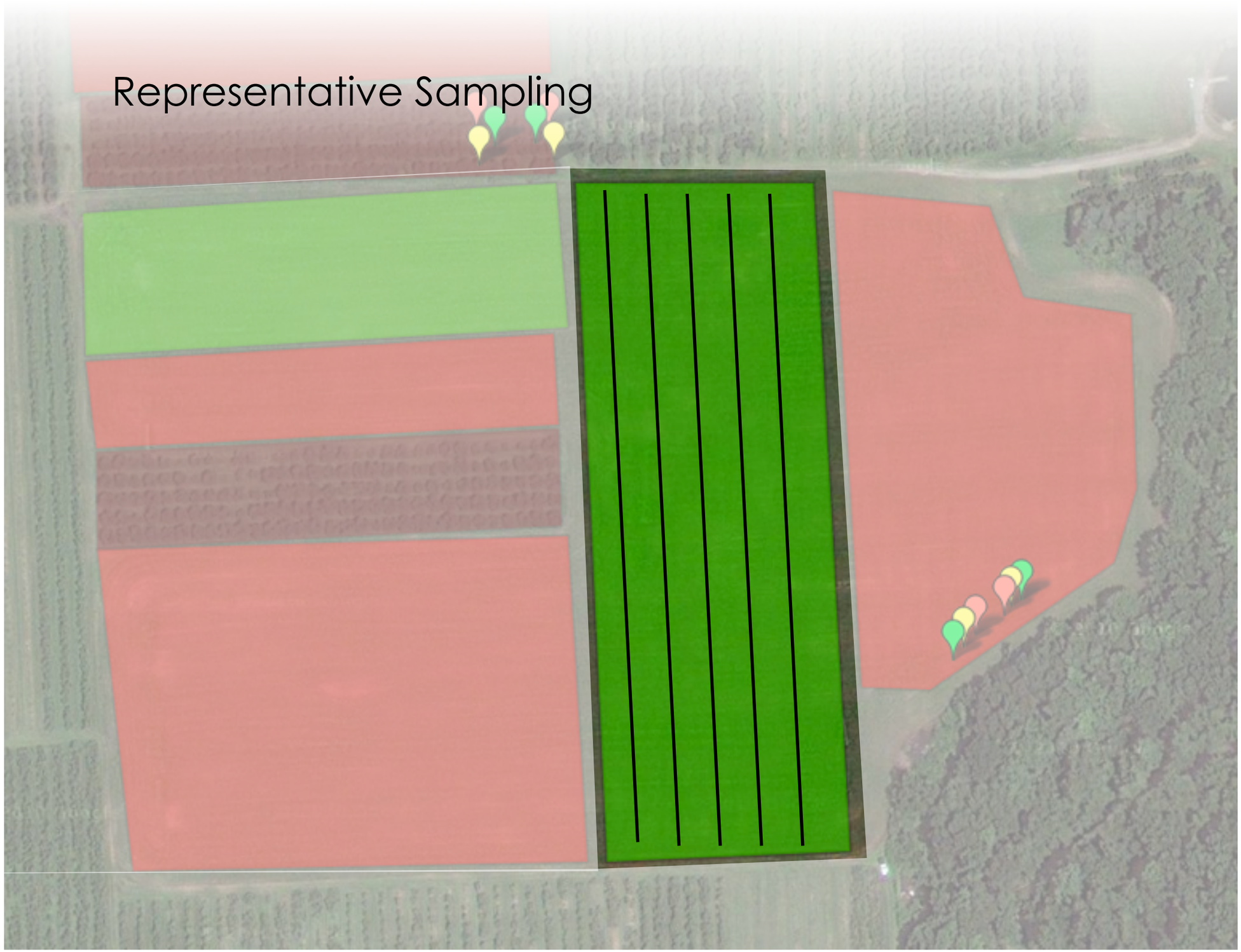
Representative Sampling



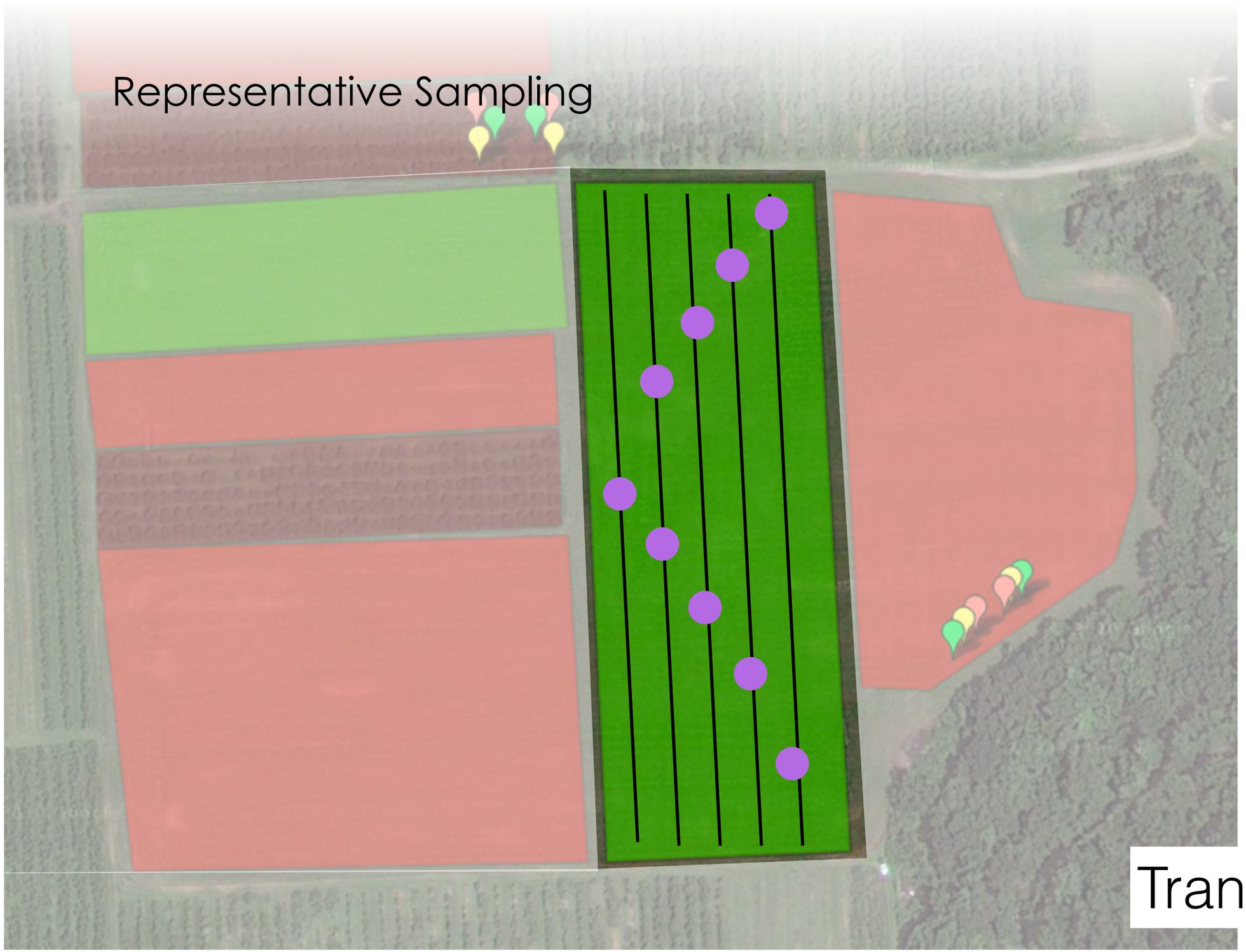
Monitor



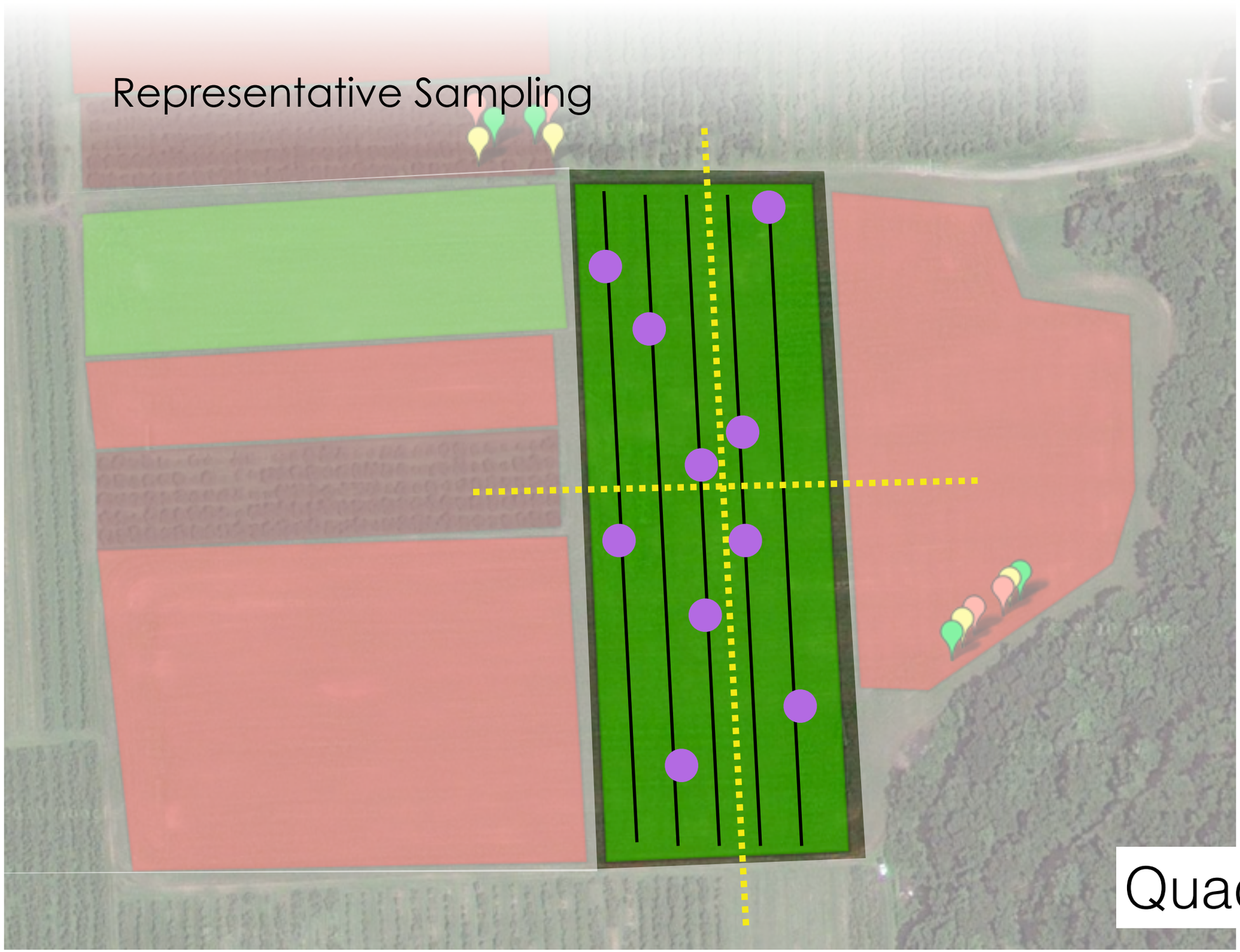
Monitor



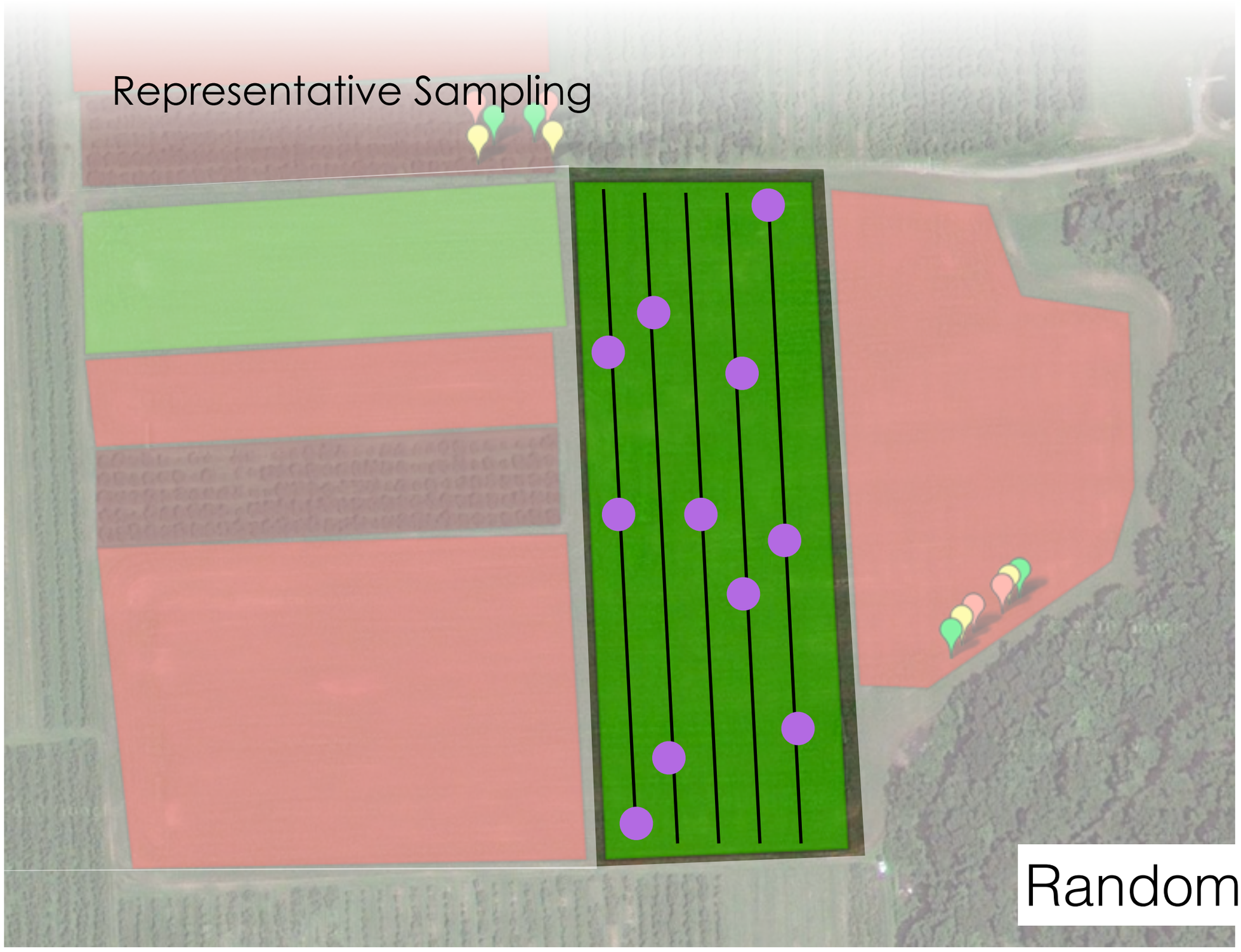
Monitor



Monitor

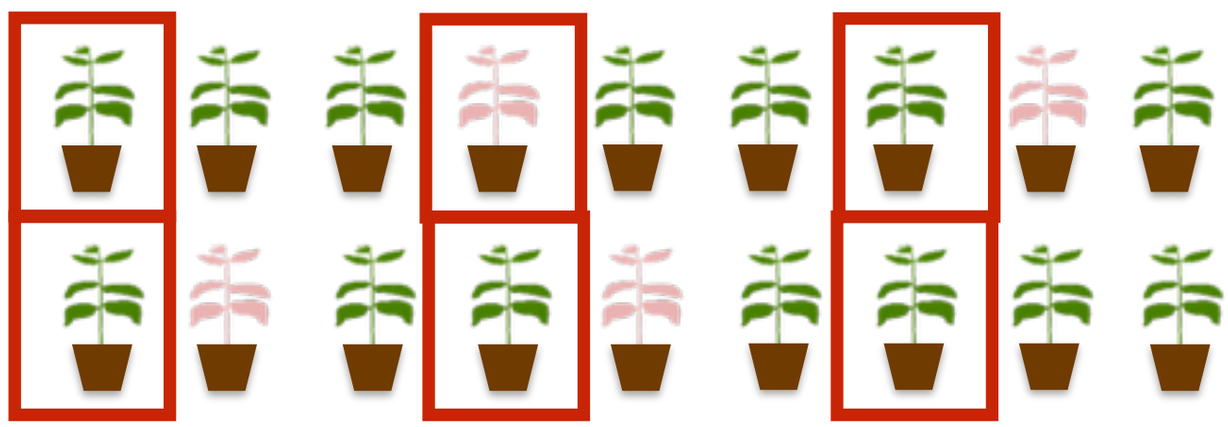


Monitor



Monitor

Presence-absence sampling

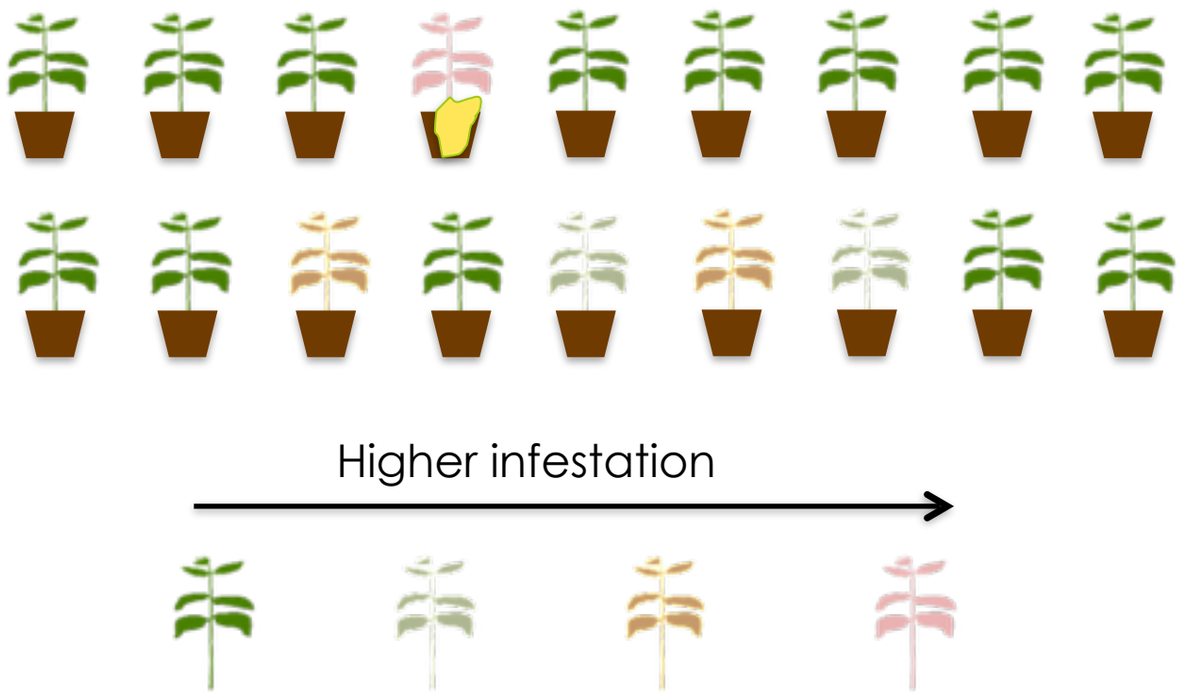


1/6 = 17%

4/20 = 20%

Monitor

Rating Infestation



Monitor

Mr. Awesome's Nursery

Awesome Monitoring Program

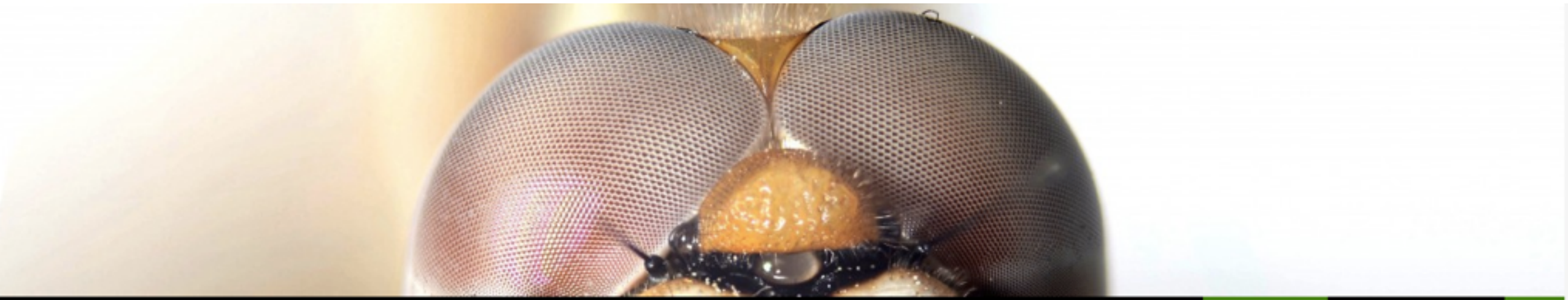
Date: 08/15/2014
Scout Name: Mr. Awesome Himself
Plot: Greenhouse 3

Crop: Zinnias
Crop Stage: Vegetative | Budding | Flowering | Post-Flowering
Sampling Method: Transect

	Damage Rating (1 - 5)		Infestation Rating (1-5)				Beating (count)	
Sample	Rasping /Sucking	Defol	Aphid	Thrips	Armyworm	2SS Mite	Thrips	Notes:
1	1	1	1	2	1	2	4	Predatory mites?
2	1	1	1	1	1	1	2	
3	2	1	2	1	1	1	0	
4	1	2	1	1	1	1	0	
5								
6								
7								
8								
9								
10								
11								
12								

Monitor

sixleggedaggie.com



Six-Legged Aggie

HOME NEWS RESOURCES ABOUT CONTACT

- SURVEY
- FORMS
- PRESENTATIONS
- PHOTO GALLERY
- LINKS

Search …

OVERTON

RECENT POSTS

- Emerging insect threats for Texas Fruit
- Growing flowering plants that are safe for pollinators in the yard and garden
- 'Natural' Pesticides – Softer on good insects?

FORMS

Monitoring Forms

Mr. Awesome's Nursery

Awesome Monitoring Program

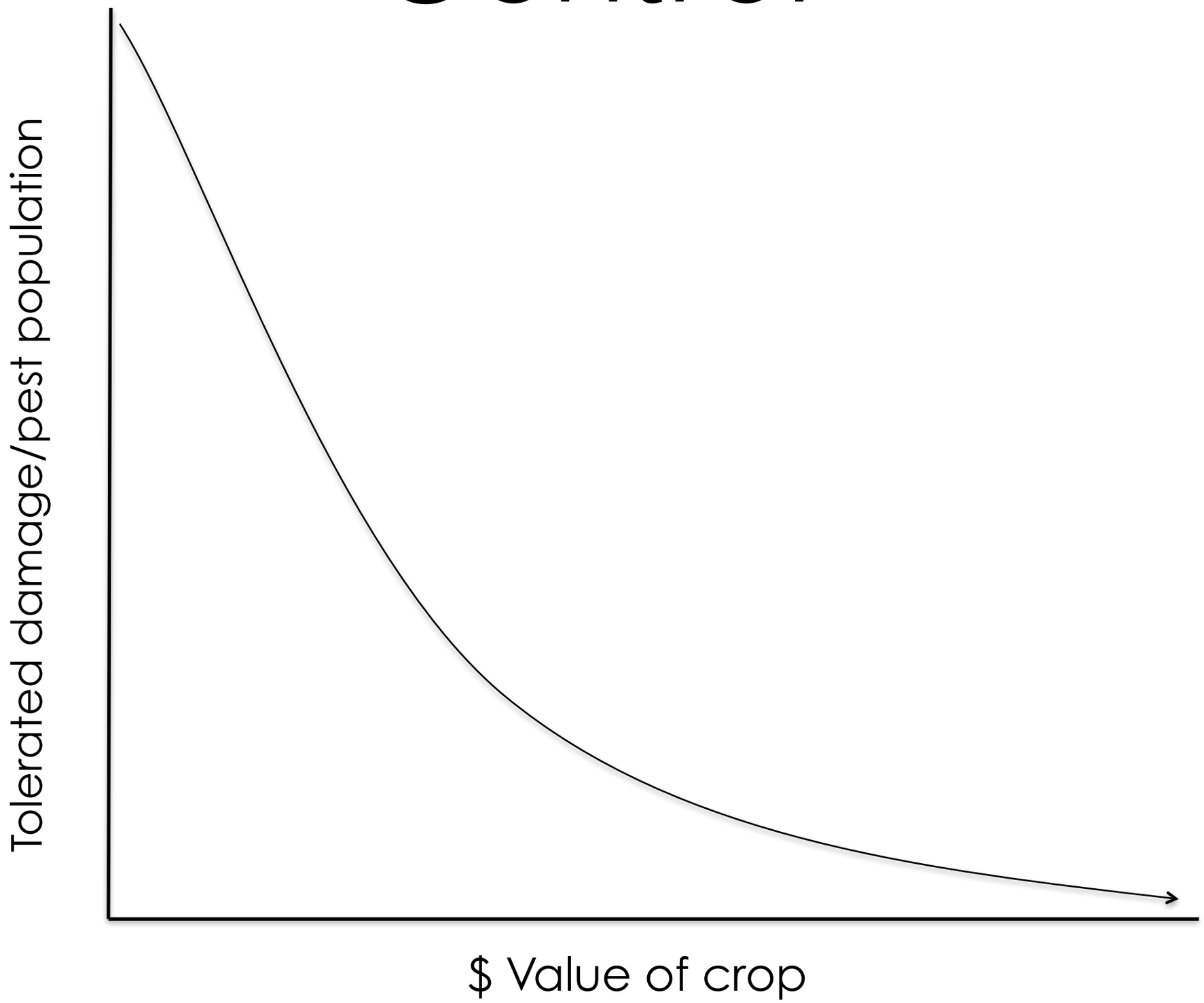
Date: Crop:

Scout Name: Crop Stage: Vegetative | Budding | Flowering | Post-Flowering

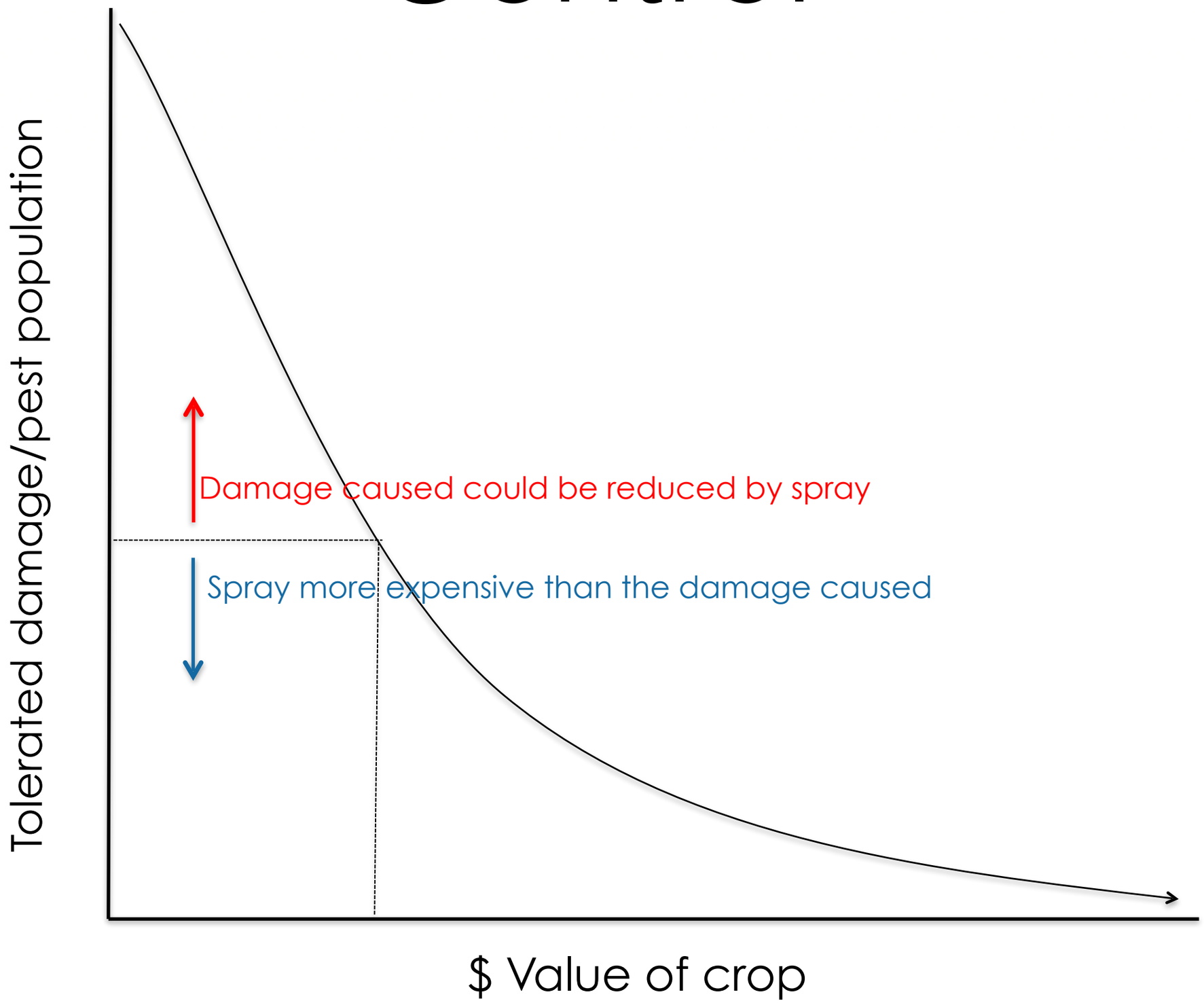
Plot: Sampling Method:

	Damage Rating (1 - 5)		Infestation Rating (1-5)				Beating (count)	
Sample	Rasping /Sucking	Defol	Aphid	Thrips	Armyworm	2SS Mite	Thrips	Notes:
1								
2								

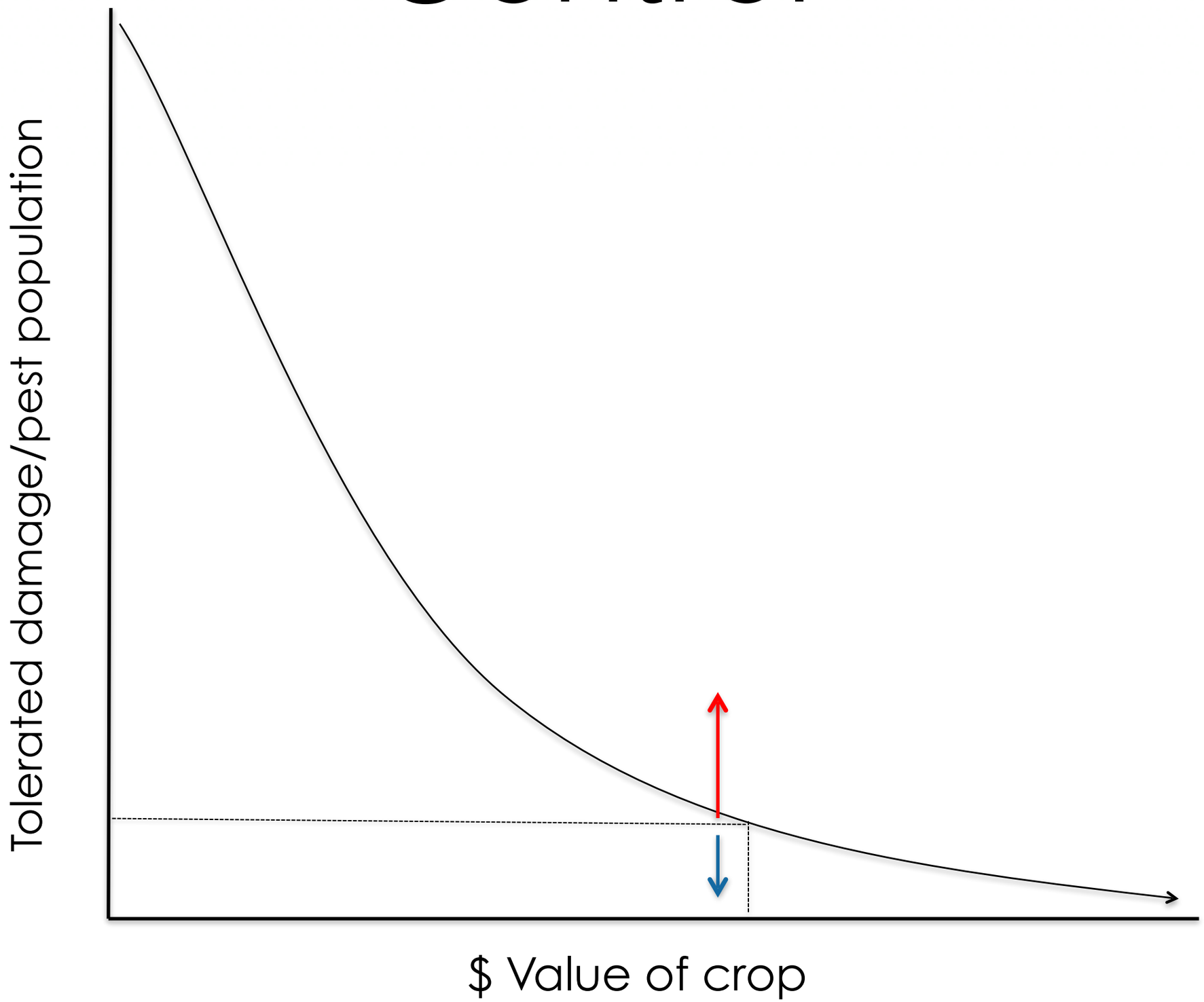
Control



Control


Tolerated damage/pest population
Damage caused could be reduced by spray
Spray more expensive than the damage caused
$ Value of crop

Control



Control | Action Thresholds

25 - 50 thrips/card
(3 traps per 10,000 sq. ft.)

>10% Infested

5 larva/sq. yard

Whiteflies: 3 adults per leaf
Aphids: 3-4 aphids/terminal leaflets
50% leaves infested

Control | Preventative

Pruning, row covers/mesh, reflective mulch

Remove weeds and avoid over fertilization

Remove thatch and avoid over-irrigation

Remove nearby hosts, prune, avoid over fertilization and reflective mulch

Control | Biological

→ Predatory thrips, green lacewings, minute pirate bugs, mites and parasitic wasps

→ Predatory mites

→ Parasitoids (braconid/tachnid flies and nematodes)

→ Parasitoids (hymenoptera), ladybeetles, lacewing larva, syrphid fly larva, big eyed bugs, minute pirate bugs

Control | Chemical

Azadirachtin, insecticidal soaps, oils (hort./neem), pyrethrins, spinosad, dinotefuran.

Insecticidal oils and soaps, abamectin, bifenthrin, fenpropathrin, spinosad

*P*ermethrin, halofenozide, bifenthrin, cyfluthrin, carbaryl and spinosad

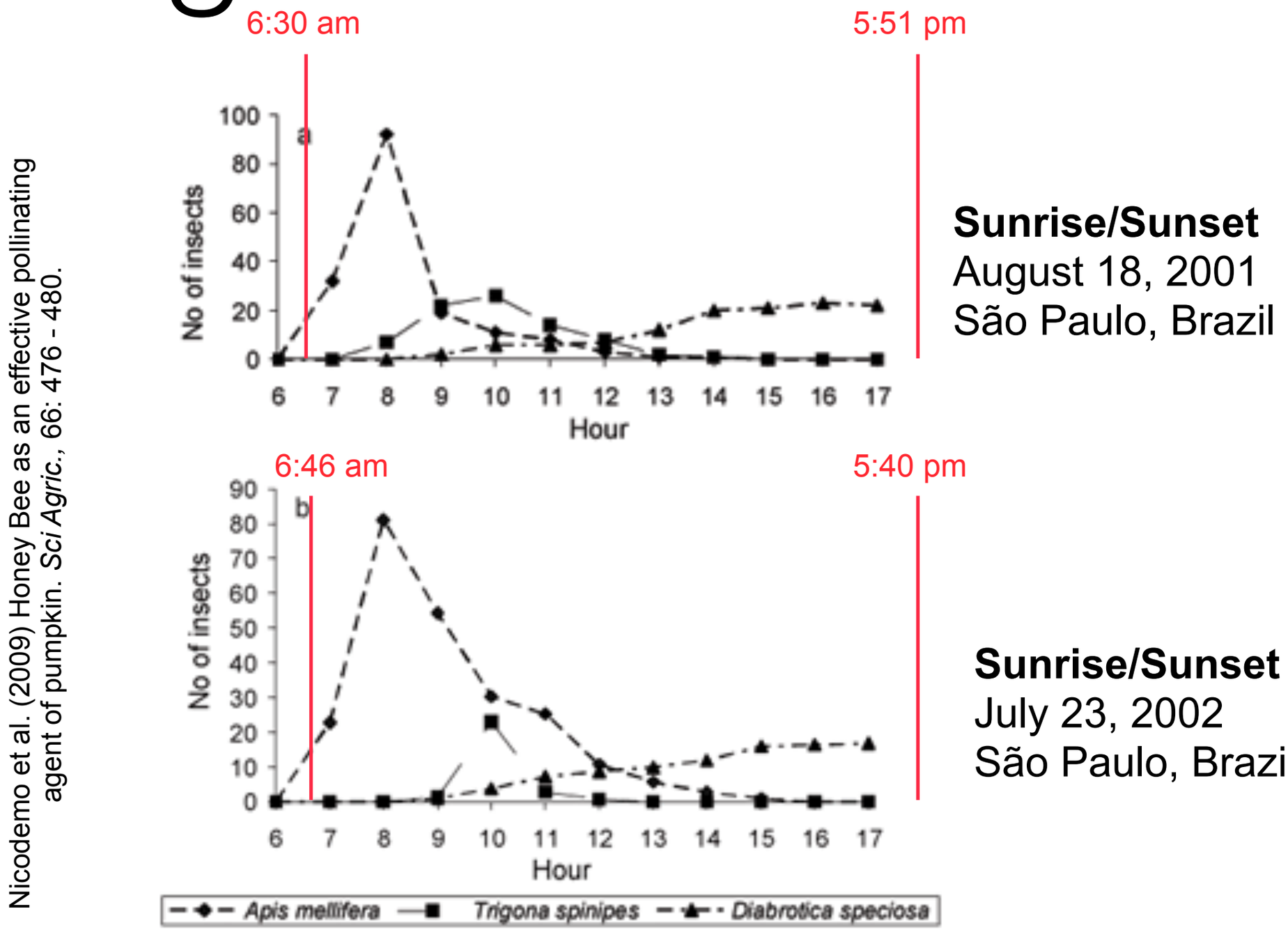
Pymetrozine, azadirachtin, insecticidal oils and soaps, pyrethrin, imidacloprid,malathion, permethrin, acephate.

Control | Chemical

Acephate alone = ↑ Spider mite populations

Imidacloprid = ↑ Spider mite populations

Timing



Nicodemo et al. (2009) Honey Bee as an effective pollinating agent of pumpkin. *Sci Agric.*, 66: 476 - 480.

Figure 1 - Most frequent insects found on flowers of pumpkin (*Cucurbita maxima*), at different hours in 2001 (A) and 2002 (B).

Sunrise/Sunset
August 18, 2001
São Paulo, Brazil

Sunrise/Sunset
July 23, 2002
São Paulo, Brazil

Pesticide labels

DIRECTIONS FOR USE

Indicaciones en español después de las de inglés

Resealable Label for Directions & Precautions

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

For best results, read and follow all label directions.

BEFORE YOU USE

Read and follow these

- Do not apply near lakes, streams, rivers, or ponds.
- Do not apply to soils which are water-logged or saturated.
- Bucket or measuring utensils should not be used for any food or drinking water purposes after use with this

ENVIRONMENTAL HAZARDS

- This pesticide is toxic to aquatic invertebrates. Do not apply directly to water.
- Do not dump rinse water into sewers or other bodies of water.
- Apply this product only as specified on this label.

FOR USE ON

Outdoor trees and shrubs including listed fruit and nut trees:

Apple	Mayhaw	Pecan
Crabapple	Oriental Pear	Quince
Loquat	Pear	

CONTROLS

TEXAS A&M AGRILIFE EXTENSION

Pesticide labels

ENVIRONMENTAL HAZARDS

This product is highly toxic to aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Apply this product only as specified on this label. Extreme care must be taken to avoid runoff. Apply only to soil or other fill substrate that will accept the solutions at the specified rate. Do not treat soil that is water-saturated or frozen, or in any conditions where run-off or movement from the treated area (site) is likely to occur.

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. This chemical demonstrates the properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

Do not formulate this product into other end-use products.

THE NEW EPA BEE ADVISORY BOX

On EPA's new and strengthened pesticide label to protect pollinators

PROTECTION OF POLLINATORS

APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.

Look for the bee hazard icon in the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

This product can kill bees and other insect pollinators.

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at:
http://pesticidestewardship.org/pollinatorprotection/Pages/default.aspx

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state/tribe, go to: www.aapco.org. Pesticide incidents can also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekill@epa.gov

Alerts users to separate restrictions on the label. These prohibit certain pesticide use when bees are present.

The new bee icon helps signal the pesticide's potential hazard to bees.

Makes clear that pesticide products can kill bees and pollinators.

Bees are often present and foraging when plants and trees flower. EPA's new label makes it clear that pesticides cannot be applied until all petals have fallen.

Warns users that direct contact and ingestion could harm pollinators. EPA is working with beekeepers, growers, pesticide companies, and others to advance pesticide management practices.

Highlights the importance of avoiding drift. Sometimes, wind can cause pesticides to drift to new areas and can cause bee kills.

The science says that there are many causes for a decline in pollinator health, including pesticide exposure. EPA's new label will help protect pollinators.

EPA

Read EPA's new and strengthened label requirements: http://go.usa.gov/jHH4

Most Common Culprits

Main culprits how we stop them from eating your crops.

Thank you

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TEXAS A&M AGRILIFE EXTENSION

Thank you

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UGA1455035: Whitney Cranshaw, Colorado State University, bugwood.org
5364128: Whitney Cranshaw, Colorado State University, bugwood.org
1476101: Whitney Cranshaw, Colorado State University, bugwood.org
5429835: Lyle Buss, University of Florida, bugwood.org
UGA5207026: Andrew Derksen, FDACS/DPI, bugwood.org
UGA2131076: David Cappaert, Michigan State University, bugwood.org
5364132: Frank Peairs, Colorado State University, bugwood.org
UGA1327079: Alton N. Sparks, Jr., University of Georgia, bugwood.org
UGA1402111: R.J. Reynolds Tobacco Company Slide Set, R.J. Reynolds Tobacco Company, bugwood.org
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5511466: Robert J. Bauernfeind, Kansas State University, bugwood.org
5511782: John Capinera, University of Florida, bugwood.org
5511460: Robert J. Bauernfeind, Kansas State University, bugwood.org
UGA1410020: Ronald Smith, Auburn University, bugwood.org
UGA5190067: Natasha Wright, Florida Department of Agriculture and Consumer Services, bugwood.org
1599077: John C. French Sr., Retired, Universities: Auburn, GA, Clemson and U of MO, bugwood.org
UGA1267067: Susan Ellis, USA APHIS PPQ, bugwood.org
UGA1124048: Phillip Roberts, University of Georgia, bugwood.org
UGA1410037: Ronald Smith, Auburn University, bugwood.org
UGA1458041: North Carolina Forest Service Archive, bugwood.org
UGA2200051: Whitney Cranshaw, Colorado State University, bugwood.org
UGA0177096: Central Science Laboratory, Harpenden Archive, British Crown, bugwood.org

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5499614: Kurt Ahlmark, FDACS Division of Plant Industry, bugwood.org
UGA1460048: David R. Lance, USDA APHIS PPQ, bugwood.org
UGA1460052: David R. Lance, USDA APHIS PPQ, bugwood.org
UGA1440134: Name: R.J. Reynolds Tobacco Company Slide Set, R.J. Reynolds Tobacco Company, boxwood.org

Thank you

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sixleggedaggie.com